

**DEPARTMENT OF DEFENSE
DEPARTMENT OF THE NAVY**

**FINDING OF NO SIGNIFICANT IMPACT FOR PUBLIC-PRIVATE VENTURE HOUSING,
SOUTH TEXAS REGION**

Pursuant to the Council on Environmental Quality regulations (40 CFR Parts 1500-1508) implementing the procedural provisions of the National Environmental Policy Act, the Department of the Navy gives notice that an Environmental Assessment (EA) has been prepared and that an Environmental Impact Statement is not required for implementation of the public-private venture (PPV) housing project for the South Texas Region.

The proposed action includes demolishing 72 units of Married Officer Quarters (MOQs) and 350 units of Fiscal Year 1966 (FY 66) family housing at Naval Air Station (NAS) Corpus Christi; constructing 395 new housing units within existing housing areas at NAS Corpus Christi; constructing 155 new housing units near Naval Station (NAVSTA) Ingleside on land provided by the PPV partnership; repairing, renovating, and privatizing 14 existing Senior Officer Quarters (SOQs) (SOQs 2 through 10 and HA through HE) at NAS Corpus Christi; and privatizing 100 existing Laguna Shores housing units, SOQ 12, and 28 mobile home pads at NAS Corpus Christi. The 15 SOQs possess sufficient significance and integrity and are eligible for listing in the National Register of Historic Places. The SOQs will be repaired and renovated in coordination with the Texas Historic Preservation Officer.

To accomplish the proposed action, the Navy intends to enter into a PPV partnership. The Navy would continue to own the land at NAS Corpus Christi, and the PPV partnership would own, operate, manage, and maintain the existing and future inventory of housing, including site infrastructure, for a period of 50 years. The PPV partnership would own the land and the proposed housing units located near NAVSTA Ingleside. All privatized units would be made available to military families, during the term of the agreement, on a preferential basis and at prescribed rents. In the unlikely event that insufficient military demand exists to fully occupy all the PPV units, short-term rental to civilians at market rates may be permitted. The proposed action will result in no net change in the number of military personnel living in the South Texas Region. In addition to the existing inventory of Navy-owned housing units, the Navy intends to contribute no more than \$29.4 million to the privatization effort, including land, renovation, and Differential Lease Payments, as authorized under 10 USC Section 2875.

Alternatives were developed to meet the following operational and environmental criteria: 1) provide military family housing in areas that meet military standards for health, safety, and education; 2) provide affordable housing at a cost compliant with the Basic Housing Allowance; 3) locate housing within a minimal commute distance of NAVSTA Ingleside; 4) locate housing in areas with existing utilities and infrastructure; and 5) minimize impacts to the natural environment. Submittals were received in response to the Navy's Request for Proposal. Five proposed sites near NAVSTA Ingleside (Alternative Sites A through E) were established as alternatives for new housing: one in Portland, two in Ingleside, and two in Aransas Pass. Each action alternative includes demolition, construction, repair, renovation, and privatization of housing at NAS Corpus Christi on land provided by the Navy, and construction of housing off-station near NAVSTA Ingleside on private land provided by the PPV partner. The No Action alternative consists of not developing a PPV partnership for the South Texas Region. Implementation of the No Action alternative would result in no change to the military family housing shortage in the area. No new housing units would be constructed and the existing housing units would not be privatized. The proposed action and the No Action alternative were evaluated in the EA. Sites A, B and D were eliminated for various

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14. ABSTRACT The South Texas Region is currently home for approximately 5,397 permanent personnel and 3,400 families. Approximately 66 percent of the military families assigned to the South Texas Region reside in privately owned housing situated throughout the community. These families either own homes or pay market rents, and compete with the civilian population for available supply. The private rental housing market in the area is generally considered tight, with rents often exceeding military allowances, particularly among the junior-enlisted pay grades, causing many military tenants to spend much more than their housing allowance to secure housing and utilities. The focus of this environmental assessment (EA) is the proposed development of a Public-Private Venture (PPV) partnership to provide adequate housing for military families in the South Texas Region. Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 allows the Department of Defense to work with the private sector to build and renovate family housing in key areas of need. Accordingly, the Navy intends to become a partner in a PPV partnership to provide safe, high-quality, energy-efficient, well-managed, affordable housing to military families in the South Texas Region.					
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reasons, Sites C and E were evaluated in the EA. Site E was selected as the preferred site. Site E is 28 acres larger and allows better opportunities for development in an environmentally sensitive manner. Development at this larger site could be planned with less impact to natural resources.

Short-term adverse impacts from construction of the proposed housing units would include the following: soil disturbance and erosion, air emissions, and noise. Long-term impacts include loss of vegetation and wildlife habitat; increase in utility use; potential filling and/or excavation of non-jurisdictional wetlands at Alternative Site E, located at Aransas Pass; minor increases in traffic; and a potential for increases in local emergency service capacities. Local school districts have capacity for the anticipated number of new students, are constructing new schools, or are anticipating the need for additional school resources to meet projected student enrollments based on annual growth rates. There will not be disproportionately high adverse human health or environmental effects on minority or low-income populations as a result of the proposed action.

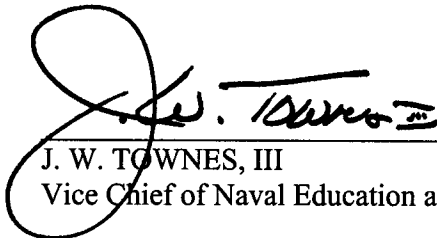
The PPV partner is required to immediately report any spills of regulated hazardous substances that are equal to or exceed the Reportable Quantity levels listed in 40 CFR 110, 117, and 302 to the National Response Center. The PPV partner would also be required to submit a written description of the spill to the U.S. EPA Regional Office, would be responsible for any required clean-up, and would be required to modify the site pollution prevention plan to document these steps. The PPV partner would be required to comply with all applicable federal, state, and local laws and regulations related to accidental spills of hazardous substances and protection of surface water and groundwater. Friable asbestos, lead-based paint hazards, and lead in soils, if present, would be properly managed and disposed to meet environmental compliance standards and regulations. Under the leasing agreement, the PPV partner will provide a risk management plan for exposure to pesticides in disturbed soils created during their redevelopment of NAS Corpus Christi housing. The management plan will set forth procedures to determine the pesticide exposure risk to human health and/or the environment, if any, and provide the procedures that will be implemented to mitigate or manage any and all risks from pesticide exposure.

Additional tax revenue which could be derived from taxing PPV housing would provide additional funding for local schools; roadway improvements; utilities; fire, police, and emergency services; and other local services provided by San Patricio County and the cities of Aransas Pass or Ingleside. The local school districts would receive annual Federal Impact Aid for a student whose parent(s) is a military member.

Based on the information gathered during preparation of the EA, the Navy finds that the implementation of the PPV housing project for the South Texas Region and the other components of the proposed action will not significantly impact the environment. The EA addressing this action may be obtained from: Commander, Southern Division, Naval Facilities Engineering Command, P. O. Box 190010, North Charleston, SC 29419-9010 (Attn: Mr. Robert Teague, Jr., Code 064RT), telephone 843/820-5785, fax 843/820-7472.

25 JAN 02

Date:


J. W. TOWNES, III

Vice Chief of Naval Education and Training

ENVIRONMENTAL ASSESSMENT

PUBLIC-PRIVATE VENTURE HOUSING SOUTH TEXAS REGION



DEPARTMENT OF THE NAVY



ENVIRONMENTAL ASSESSMENT

**PUBLIC-PRIVATE VENTURE HOUSING
SOUTH TEXAS REGION**



DEPARTMENT OF THE NAVY

December 2001

ENVIRONMENTAL ASSESSMENT

Responsible Agency:

Department of the Navy
Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina

Title:

Environmental Assessment for Public-Private Venture Housing, South Texas Region

Additional Information:

The following person may be contacted for additional information concerning this document. Comments can be sent to this address:

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Type of Report:

Environmental Assessment

Abstract:

The South Texas Region is currently home for approximately 5,397 permanent personnel and 3,400 families. Approximately 66 percent of the military families assigned to the South Texas Region reside in privately owned housing situated throughout the community. These families either own homes or pay market rents, and compete with the civilian population for available supply. The private rental housing market in the area is generally considered tight, with rents often exceeding military allowances, particularly among the junior-enlisted pay grades, causing many military tenants to spend much more than their housing allowance to secure housing and utilities. The focus of this environmental assessment (EA) is the proposed development of a Public-Private Venture (PPV) partnership to provide adequate housing for military families in the South Texas Region. Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 allows the Department of Defense to work with the private sector to build and renovate family housing in key areas of need. Accordingly, the Navy intends to become a partner in a PPV partnership to provide safe, high-quality, energy-efficient, well-managed, affordable housing to military families in the South Texas Region.

SUMMARY

SUMMARY

1. TYPE OF REPORT

This report is an environmental assessment (EA).

2. NAME OF ACTION

Environmental Assessment for Public-Private Venture Housing, South Texas Region

3. DESCRIPTION OF ACTION

The proposed action is development of a Public-Private Venture (PPV) partnership to provide additional housing for military families in the South Texas Region. The proposed action includes the following:

- Demolish 72 units of Married Officer Quarters (MOQs) at NAS Corpus Christi
- Demolish 350 units of Fiscal Year (FY) 66 family housing at NAS Corpus Christi
- Construct 395 new housing units within existing housing areas at NAS Corpus Christi
- Construct 155 new housing units on land provided by the PPV partner
- Repair, renovate, and privatize 14 existing NAS Corpus Christi housing units
- Privatize 100 existing family housing units at Laguna Shores, SOQ 12, and 28 mobile home pads at NAS Corpus Christi

The 72 MOQ units would be replaced with 43 units constructed at NAS Corpus Christi and 29 units constructed on land provided by the PPV partner. New housing at NAS Corpus Christi would be constructed in existing housing areas. These areas include the existing MOQ housing area and the two FY 66 housing areas. The existing family housing units that will be operated by the PPV partner include 15 Senior Officers Quarters (SOQs) and 100 Laguna Shores housing units. Fourteen of the 15 SOQs would also be repaired and renovated by the PPV partner. The Navy would continue to own the land at NAS Corpus Christi, and the PPV partner would own, operate, manage, and maintain the existing and future inventory of Navy-owned housing, including site infrastructure, for a period of 50 years. The PPV partner would retain ownership of the land and the proposed 155 new housing units located near NAVSTA Ingleside. In addition to the existing inventory of Navy-owned housing units, the Navy intends to contribute no more than \$29.4 million to the privatization effort, including land, renovation, and Differential Lease Payments, as authorized under 10 USC Section 2875.

4. PURPOSE OF AND NEED FOR THE ACTION

The South Texas Region is of critical importance to the Navy. The Navy presence and mission in the region have grown considerably in recent years and are expected to expand in the future. The Navy has determined there is a shortage of affordable family housing in the South Texas Region, particularly for junior enlisted service members. Reductions in retention, morale, and quality of life are the effects of this housing shortage. Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (10 United States Code [USC] 2871-2885) allows the Department of Defense (DOD) to work with the private sector to build and renovate family housing in key areas of need. Accordingly, the Navy intends to become a partner in a PPV partnership to provide safe,

high-quality, energy-efficient, well-managed, affordable housing to military families in the South Texas Region. The purpose of the proposed PPV partnership in South Texas is to use a variety of private sector approaches to build and renovate family housing and support facilities more quickly and cost-effectively. Approximately 64 percent of the military families assigned to the South Texas Region reside in privately owned rental housing. This project would provide 200 additional housing units in the South Texas area. Four of these units will be for resident property managers, and 196 units will be for Navy families. The proposed project would fill the need for adequate and affordable housing for Navy families on the government-owned housing waiting list and those that are renting private housing and not on the waiting list.

5. ALTERNATIVES

Five sites for the PPV family housing area near NAVSTA Ingleside were proposed in response to the Navy's Request for Proposal (RFP), and were established as alternatives for consideration in this EA. Each action alternative also includes the demolition, construction, repair, renovation, and privatization of housing at NAS Corpus Christi. No available DOD land is available on NAVSTA Ingleside for construction of the required 155 new housing units, including the 29 MOQ replacement units; therefore, the land provided by the PPV partner must be used for the proposed PPV housing in the area of NAVSTA Ingleside. Five sites, located in Portland, Ingleside, and Aransas Pass, Texas have been proposed in the area near NAVSTA Ingleside.

The No Action Alternative evaluated in this EA consists of not developing a PPV partnership for the South Texas Region. Implementation of the No Action Alternative would result in no change to the military family housing shortage in the South Texas area. No new housing units would be constructed and the existing housing units would not be privatized, renovated, or demolished. The Navy would continue to own and maintain the existing housing units and associated land, facilities, and utilities at NAS Corpus Christi.

6. SUMMARY OF ENVIRONMENTAL IMPACT

Short-term adverse impacts from construction of the proposed housing units would include the following: soil disturbance and erosion, air emissions, and noise. Long-term impacts include loss of vegetation and wildlife habitat; increase in utility use; potential filling and/or excavation of non-jurisdictional wetlands at Alternative Site E; minor increases in traffic; and a slight potential for increases in local emergency service capacities.

7. MEANS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

If selected by the Navy, the PPV partner for Alternative Site E would donate funds for the purpose of acquiring and preserving habitat that is ecologically comparable to the habitat that will be impacted. This plan is proposed to promote stewardship of live oak/redbay habitat in the Coastal Bend Area.

The NPDES permit would require that the PPV partner immediately report any spills of regulated hazardous substances that are equal to or exceed the Reportable Quantity levels listed in 40 CFR 110, 117, and 302 to the National Response Center. The PPV partner would also be required to submit a written description of the spill to the U.S. EPA Regional Office, would be responsible for any required clean-up, and would be required to modify the site pollution prevention plan to document these steps. The PPV partner would be required to comply with all applicable federal, state, and local laws and regulations related to accidental spills of hazardous substances and protection of

surface water and groundwater. Friable asbestos, lead-based paint hazards, and lead in soils, if present, would be properly managed and disposed to meet environmental compliance standards and regulations. Under the leasing agreement, the PPV partner will provide a risk management plan for exposure to pesticides in disturbed soils created during the redevelopment of NAS Corpus Christi housing by the PPV partner. The management plan will set forth procedures to determine the pesticide exposure risk to human health and/or the environment, if any, and provide the procedures that will be implemented to mitigate or manage any and all risks from pesticide exposure.

Additional tax revenue which could be derived from taxing PPV housing would provide some additional funding for local schools; roadway improvements; utilities; fire, police, and emergency services; and other local services provided by San Patricio County and the cities of Aransas Pass or Ingleside. The local school districts would receive annual Federal Impact Aid for each additional student whose parent(s) is a military member.

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ABBREVIATIONS AND ACRONYMS

ACM	asbestos-containing materials
ADT	average daily traffic
AICUZ	Air Installation Compatible Use Zones
APZ	Accident Potential Zone
BAH	Basic Allowance for Housing
BTUs	British Thermal Units
DLPs	Differential Lease Payments
BEQ	Bachelor Enlisted Quarters
BMPs	best management practices
BOQ	Bachelor Officers Quarters
BTU	British thermal unit
°C	degrees Celsius
CCAD	Corpus Christi Army Depot
CCBNEP	Corpus Christi Bay National Estuary Program
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CLOMR	Conditional Letter of Map Revision
cm	centimeter(s)
CMP	Coastal Management Plan
CP&L	Central Power and Light
CRMP	Cultural Resource Management Plan
CNRAs	Coastal Natural Resource Area
CZMA	Coastal Zone Management Act
dB	decibel(s)
DLPs	Differential Lease Payments
DNL	day-night average sound level
DOD	Department of Defense
DON	Department of the Navy
EA	Environmental Assessment
EBS	Environmental Baseline Survey
e.g.	<i>exempli gratia</i> , for example
EMS	emergency medical service
ESA	Environmental Site Assessment
ESQD	Explosive Safety Quantity Distance
et seq.	<i>et sequentia</i> , and the following ones
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FM	Farm-to-Market
FY	Fiscal Year
FY66	Fiscal Year 1966
GCCBA	Greater Corpus Christi Business Alliance
ha	hectare(s)
HERO	Hazardous Electromagnetic Radiation to Ordnance
HF	high frequency
HUD	U.S. Department of Housing and Urban Development
i.e.	<i>id est</i> , that is

IH	Interstate Highway
ISD	Independent School District
K	kindergarten
kg	kilogram(s)
km	kilometer(s)
kwh	kilowatt hour(s)
LBP	lead-based paint
LOMR	Letter of Map Revision
LOS	level of service
LPST	leaking petroleum storage tank
m	meter(s)
MOQs	Married Officers Quarters
MSA	metropolitan statistical area
MSCDC	Missouri State Census Data Center
MWR	Morale, Welfare, and Recreation
NALF	Naval Auxiliary Landing Field
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NAVSTA	Naval Station
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Services
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OPNAVINST	Chief of Naval Operations Instruction
PCB	polychlorinated biphenyl
ppb	parts per billion
PPV	Public-Private Venture
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
SH	State Highway
SHPO	State Historic Preservation Officer
SEQs	Senior Enlisted Quarters
SOQs	Senior Officers Quarters
SWPPP	Stormwater Pollution Prevention Plan
TAC	Texas Administrative Code
TARL	Texas Archeological Research Laboratory
TC&B	Turner Collie & Braden Inc.
TPWD	Texas Parks and Wildlife Department
THC	Texas Historical Commission
TNRCC	Texas Natural Resource Conservation Commission
TSCA	Toxic Substances Control Act
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
U.S. EPA	U.S. Environmental Protection Agency
U.S.	United States

US
USACE
USC
USGS
USFWS
UST

U.S. Highway
U.S. Army Corps of Engineers
United States Code
U.S. Geological Survey
U.S. Fish and Wildlife Service
underground storage tank

1.0 PURPOSE OF AND NEED FOR ACTION

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The Corpus Christi Bay area and adjacent Texas Gulf Coast provide a desirable locale for the Navy's operational, training, and support facilities in a single geographical area (South Texas Region). Installations that are the focus of the proposed action include Naval Air Station (NAS) Corpus Christi and Naval Station (NAVSTA) Ingleside (*Figure 1-1*). NAS Corpus Christi and NAVSTA Ingleside host a variety of Department of the Navy (Navy) activities. NAS Corpus Christi currently hosts the Chief of Naval Air Training who oversees the training of prospective aviators and naval flight officers through its training air wings. The Commander, Mine Warfare Command, is also located at NAS Corpus Christi, along with the Mine Warfare Command's helicopter squadrons. NAVSTA Ingleside hosts the Mine Warfare Center of Excellence along with the Mine Warfare ships and the majority of the personnel that make up the Mine Warfare forces.

The South Texas Region is currently home for approximately 5,397 permanent personnel and 3,400 families (U.S. Navy, 2001j). There are 537 family housing units and 28 mobile home pads at NAS Corpus Christi and no family housing units at NAVSTA Ingleside (U.S. Navy, 1999a, 2000y, 2001k). Approximately 66 percent of the military families assigned to the South Texas Region reside in privately-owned housing situated throughout the community (U.S. Navy, 2001j). These families pay market rents, and compete with the civilian population for the available housing supply. Although there is considerable variation among the several sub-markets comprising the region, the private rental housing market in the area is generally considered tight, with rental vacancies at less than 5 percent. Public and private sector housing that meets the following minimum standards are considered acceptable:

- Located within a 10 mile (16-km) commute of NAVSTA Ingleside
- A complete dwelling with a private entrance
- Includes a bathroom and kitchen for the sole use of the occupant
- Structurally sound with no health and safety hazard to occupants
- Includes hot and cold running water, electricity, a shower or bath, and at least one useable toilet
- The number of bedrooms is sufficient to ensure double or single occupancy
- Kitchen appliances are present or available on a rental basis
- Located in an area that is not officially designated unacceptable for human occupancy
- Housing costs are 15 to 18 percent lower than the Basic Allowance for Housing (BAH), to minimize out-of-pocket expenses
- Compliant with local, state and federal environmental laws, codes and regulations

The focus of this Environmental Assessment (EA) is the proposed development of a Public-Private Venture (PPV) partnership to provide additional housing for military families in the South Texas Region. The document provides the decision-maker with information needed to understand the future environmental consequences that could result from the implementation of the PPV partnership in the area. The EA has been prepared in accordance with the Council on Environmental Quality's (CEQ) National Environmental Policy Act (NEPA) regulations, as implemented by the Navy's

1.2 PURPOSE OF AND NEED FOR ACTION

The South Texas Region is of critical importance to the Navy. The Navy presence and mission in the region have grown considerably in recent years and are expected to expand in the future. The Navy has determined there is a shortage of affordable family housing in the South Texas Region, particularly for junior enlisted service members. Reductions in retention, morale, and quality of life are the effects of this housing shortage. Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (10 United States Code [USC] 2871-2885) allows the Department of Defense (DOD) to work with the private sector to build and renovate family housing in key areas of need. Accordingly, the Navy intends to become a partner in a PPV partnership to provide safe, high-quality, energy-efficient, well-managed, affordable housing to military families in the South Texas Region. The purpose of the proposed PPV partnership in South Texas is to use a variety of private sector approaches to build and renovate family housing and support facilities more quickly and cost-effectively. Approximately 64 percent of the military families assigned to the South Texas Region reside in privately owned rental housing. This project would provide 200 additional housing units in the South Texas area. Four of these units will be for resident property managers, and 196 units will be for Navy families. The proposed project would fill the need for adequate and affordable housing for Navy families on the government-owned housing waiting list and those that are renting private housing and not on the waiting list.

1.3 SUMMARY OF THE PROPOSED ACTION

The proposed action is development of a PPV partnership to provide additional housing for military families in the South Texas Region. The proposed action includes the following (U.S. Navy, 2000y, U.S. Navy, 2001i):

- Demolish 72 units of Married Officer Quarters (MOQs) at NAS Corpus Christi
- Demolish 350 units of Fiscal Year (FY) 66 family housing at NAS Corpus Christi
- Construct 395 new housing units within existing housing areas at NAS Corpus Christi
- Construct 155 new housing units on land provided by the PPV partner
- Repair, renovate, and privatize 14 existing NAS Corpus Christi housing units
- Privatize 100 existing family housing units at Laguna Shores, SOQ 12, and 28 mobile home pads at NAS Corpus Christi

The 72 MOQ units would be replaced with 43 units constructed at NAS Corpus Christi and 29 units constructed on land provided by the PPV partner. New housing at NAS Corpus Christi would be constructed in existing housing areas. These areas include the existing MOQ housing area and the two FY 66 housing areas.

The existing family housing units that will be operated by the PPV partner include 15 Senior Officers Quarters (SOQs) and 100 Laguna Shores housing units. Fourteen of the 15 SOQs would also be repaired and renovated by the PPV partner. The existing housing units are discussed in more detail in *Section 3.1.1*. This EA also evaluates alternative sites for the 155 new housing units to be constructed on land provided by the PPV partner.

The Navy would continue to own the land at NAS Corpus Christi, and the PPV partner would own, operate, manage, and maintain the existing and future inventory of Navy-owned housing, including site infrastructure, for a period of 50 years. The PPV partner would retain ownership of the land and the proposed 155 new housing units located near NAVSTA Ingleside. All privatized units would be made available to military families, during the term of the agreement, on a preferential basis and at prescribed rents. In the unlikely event that insufficient military demand exists to fully occupy all the PPV units, short-term rental to non-DOD civilians at market rates may be permitted (U.S. Navy, 1999a). To minimize the potential of non-DOD occupancy, military members will be referred to on-station housing units first.

In addition to the existing inventory of Navy-owned housing units, the Navy intends to contribute no more than \$29.4 million to the privatization effort, including land, renovation, and Differential Lease Payments (DLPs), as authorized under 10 USC Section 2875 (U.S. Navy, 1999a and 2001k).

2.0 ALTERNATIVES

2.0 ALTERNATIVES

This section describes the proposed action and alternatives, including the no action alternative.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the development of a PPV partnership to provide additional housing for military families in the South Texas Region. The proposed action includes the following components:

- Demolish 72 units of Married Officer Quarters (MOQs) at NAS Corpus Christi
- Demolish 350 units of Fiscal Year (FY) 66 family housing at NAS Corpus Christi
- Construct 395 new housing units within existing housing areas at NAS Corpus Christi
- Repair, renovate, and privatize 14 existing NAS Corpus Christi housing units
- Privatize 100 existing family housing units located at Laguna Shores, SOQ 12, and 28 mobile home pads at NAS Corpus Christi
- Construct 155 new housing units on land provided by the PPV partner

The PPV partner would undertake all demolition, construction, repair, and renovation activities listed above. The PPV partner would own, operate, manage, and maintain the existing inventory of Navy-owned housing at NAS Corpus Christi, and any additional constructed housing, including site infrastructure, for a term of 50 years. The land at NAS Corpus Christi would continue to be owned by the Navy.

At NAS Corpus Christi, the proposed action includes demolition of 72 unoccupied, non-historic housing units (MOQs); construction of 43 replacement and 2 other housing units; demolition and replacement of 350 housing units (FY 66); short-term repairs and renovation for 14 historic housing units (SOQs 2 through 10 and HA through HE); and maintenance of 100 Laguna Shores housing units and SOQ 12. Use of the mobile home pads will be phased out over several years. SOQs 1 and 11 are not part of the proposed action and would not be privatized. A description of the proposed housing units to be constructed at NAS Corpus Christi and near NAVSTA Ingleside is presented in *Table 2-1*. The family housing area at NAS Corpus Christi covers approximately 140 acres (57 hectares [ha]) (*Figure 2-1*), and the existing housing units are discussed in more detail in *Section 3.1.1*. The proposed demolition and construction of housing units would be phased so that as units are demolished, families would be temporarily housed in existing or new family housing units.

The intent of renovation and minor repair is to upgrade the housing units to present-day design and construction standards to bring them into conformance with current building and fire codes. The repair and revitalization of the existing housing units includes renovating the kitchens and bathrooms, refinishing ceilings, installing carpet in the bedrooms and halls, updating electrical wiring, installing ceiling fans, replacing exterior doors and windows, replacing carports, installing interconnected smoke detectors, relocating air condition condensers to the rear of the units, and reconfiguring ductwork. The Navy will approve major repair and renovation plans and would coordinate with the State Historic Preservation Officer (SHPO) (U.S. Navy, 2000y).

TABLE 2-1 HOUSING UNITS PROPOSED FOR CONSTRUCTION

Number/Type of Units	Square Footage Per Unit	Tenant Pay Grade
Land Provided by the DON at NAS Corpus Christi		
29 two-bedroom townhomes	1,488	E2 to E6
30 two-bedroom townhomes	1,674	E7 and O1 to O3
239 three-bedroom townhomes	1,488	E1 to E6
13 three-bedroom townhomes	1,674	E7 and O1 to O3
33 four-bedroom townhomes	1,674	E3 to E6
51 four-bedroom townhomes	1,798	E7 and O1 to O5
Land Provided by the Private Partner Near NAVSTA Ingleside		
42 two-bedroom townhomes	1,488	E1 to E6
45 three-bedroom townhomes	1,488	E2 to E6
3 three-bedroom townhomes	1,674	E7 to E8
59 four-bedroom townhomes	1,674	E4 to E6
7 four-bedroom townhomes	1,798	E7 to E9

Note: Multiply by 0.0929 to convert square feet to square meters.

Source: U.S. Navy, 2000y, 2001i and 2001l

* Note: SOQs 1 and 11 are not included in the proposed PPV.

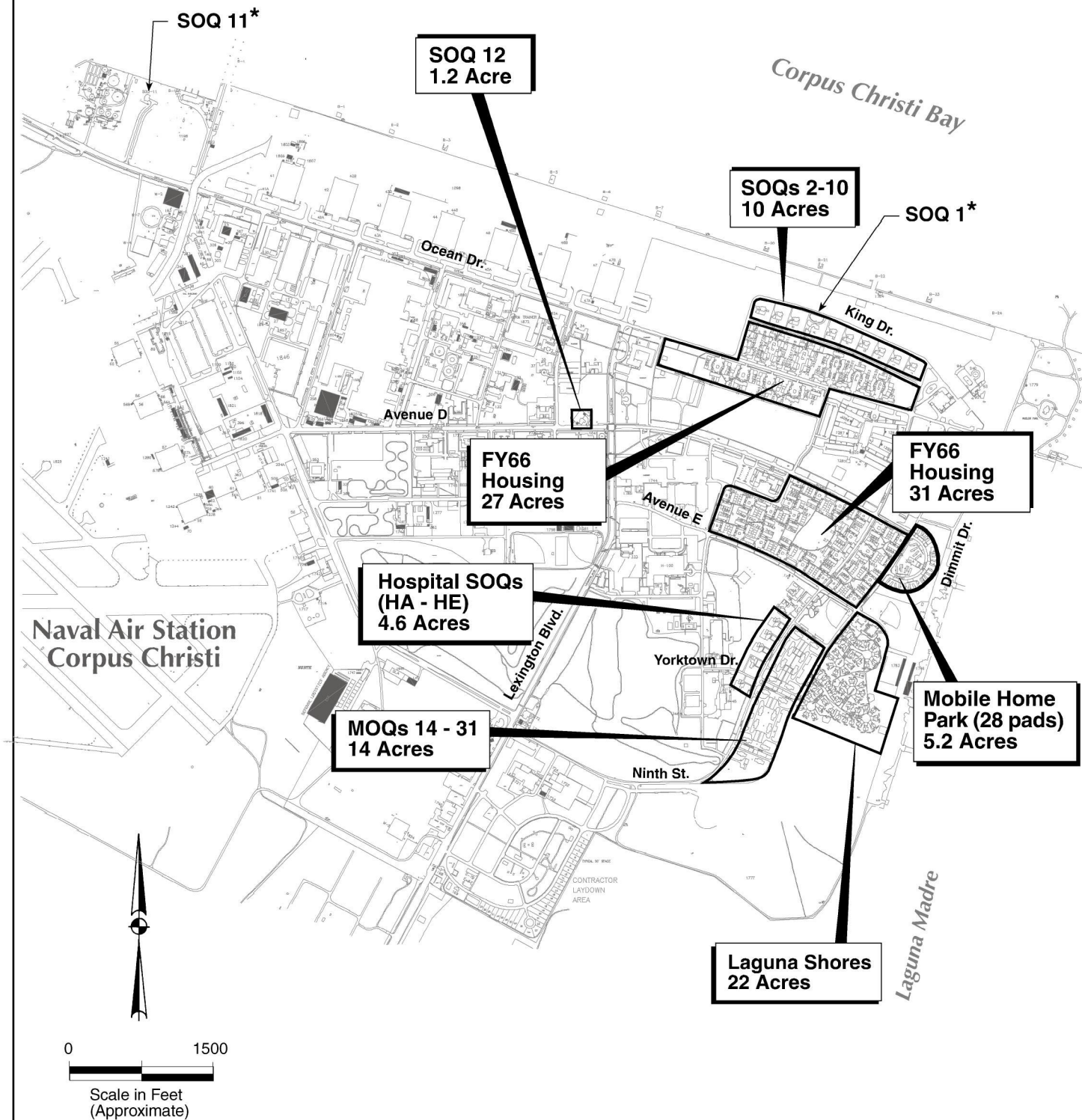


Figure 2-1. Family Housing Areas - NAS Corpus Christi
(U.S. Navy, 1999e and 2000j)

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

The PPV partner would also construct 155 housing units within a 10-mile (16-km) distance of NAVSTA Ingleside on land provided by the PPV partner. These units would include 29 housing units to replace MOQ housing at NAS Corpus Christi (U.S. Navy, 2000y).

All privatized units would be made available to military families, during the term of the agreement, on a preferential basis and at prescribed rents. Rental rates for all qualified military tenants would be the Basic Allowance for Housing (BAH), less an amount to cover normal utility usage; thus, a qualified military tenant would not be required to cover any out-of-pocket expenses for rent or charges for normal utility usage. The 2000 and 2001 BAH for military personnel with dependants at NAS Corpus Christi and NAVSTA Ingleside are as follows (U.S. Navy, 2000m and 2001a):

Pay Grade	Monthly Pay Range	
	2000	2001
E1-E9	\$592.00 to \$885.00	\$622.00 to \$975.00
W1-W5	\$719.00 to \$1,013.00	\$814.00 to \$1,047.00
O1E-O3E	\$773.00 to \$ 930.00	\$868.00 to \$998.00
O1-O10	\$653.00 to \$1,199.00	\$735.00 to \$1,199.00

Rental rates would be adjusted annually, based on adjustments to the BAH for military personnel with dependents stationed in the South Texas Region. Rent for the new housing units to be constructed at NAS Corpus Christi would range from \$458.08 to \$706.34 per month (not including utility costs) for the two-bedroom units, \$458.08 to \$706.34 per month for the three-bedroom units, and \$461.34 to \$695.18 per month for the four-bedroom units, based on the 2000 BAH. Rent for the privatized existing housing units at NAS Corpus Christi would range from \$454.57 to \$1,009.15 per month for the 350 FY 66 housing units, \$479.59 to \$652.78 per month for the 100 Laguna Shores units, and \$861.46 to \$962.26 per month for the remaining units. The current monthly rent and service charges for the mobile home park are \$75.02 per pad. Rent for the housing units to be constructed near NAVSTA Ingleside would range from \$458.08 to \$581.08 per month for the two-bedroom units, \$458.08 to \$674.34 per month for the three-bedroom units, and \$461.34 to \$723.18 per month for the four-bedroom units. The BAH would cover rent and average utility charges. The PPV housing units would be available to the following (in order of priority): active duty military families (DOD), active duty Coast Guard families (Department of Transportation), active duty military bachelors, active duty reserve families, reserve bachelors, DOD civilians, military retirees, and non-DOD civilians (U.S. Navy, 1999a). In the unlikely event that insufficient military demand exists to fully occupy all the PPV units, short-term rental to non-DOD civilians at market rates may be permitted (U.S. Navy, 2001i). To minimize the potential of non-DOD occupancy, military members will be referred to on-station housing units first.

2.2 ACTION ALTERNATIVES

Five sites for the PPV family housing area near NAVSTA Ingleside were proposed in response to the Navy's Request for Proposal (RFP), and were established as alternatives for consideration in this EA. Each action alternative also includes the demolition, construction, repair, renovation, and privatization of housing at NAS Corpus Christi, as described in *Section 2.1*. No available DOD land is available on NAVSTA Ingleside for construction of the required 155 new housing units, including the 29 MOQ replacement units; therefore, the land provided by the PPV partner must be used for the proposed PPV housing in the area of NAVSTA Ingleside. Five sites, located in Portland, Ingleside,

and Aransas Pass, Texas have been proposed in the area near NAVSTA Ingleside (*Figures 1-1, 2-2, 2-3, and 2-4*). Each off-station alternative housing site is briefly described below.

Section 2801 of the National Defense Authorization Act for Fiscal Year 1996 allows the DOD to provide money, available land, and facilities in proposed PPV partnerships to leverage private investment for the construction and renovation of family housing facilities faster and at a lower cost to United States (U.S.) taxpayers.

2.2.1 Alternative Site A - Portland

Alternative Site A is 22.3 acres (9.0 ha) and is located in Portland, Texas (*Figure 2-2*). The site is divided into two parcels that are present on both sides of North Shore Boulevard (*Figure 2-5*). The portion of Alternative Site A located north of North Shore Boulevard is 9.8 acres (3.9 ha), and the portion located south of North Shore Boulevard is 12.5 acres (5.1 ha). Thirty-eight single-family detached homes would be constructed on the north side of North Shore Boulevard, for a site density of approximately 4 units per acre, and 117 townhomes would be constructed on the south side of Northshore Boulevard, for a site density of approximately 9 units per acre (U.S. Navy, 2000w). Alternative Site A is an approximate 12-mile (19-km) commute from NAVSTA Ingleside.

2.2.2 Alternative Site B – Ingleside 20 acres

Alternative Site B is located within the Ingleside City Limits (*Figure 2-3*). Site B is a mixed-use site, and is located adjacent to the north side of State Highway (SH) 361 and approximately 1,600 feet (488 meters [m]) west of Farm-to-Market (FM) 1069 in Ingleside, Texas (*Figure 2-6*). The northern and eastern corners of Alternative Site B are zoned as Single-family Residential. A portion of the southern corner is zoned Multi-family Residential, and the other portion of the southern corner is zoned as General Commercial. A portion of the western corner is zoned Local Commercial, and the other portion of the eastern corner is zoned Residential (City of Ingleside, 1999). Permitted uses under Single-family Residential, General Commercial, and Local Commercial zoning do not include multi-family housing developments (City of Ingleside, 1997). A density of 10 units per acre (0.4 ha) is proposed for the planned PPV development. The topography of the site is flat, and the site has been cleared of trees. Utilities are available to the site. This site is an approximate 4-mile (6-km) commute from NAVSTA Ingleside.

2.2.3 Alternative Site C – Ingleside 27 acres

Alternative Site C, consisting of approximately 27 acres (11 ha), is located 1.0 mile (1.6 km) east of the intersection of SH 361 and FM 1069 in Ingleside, Texas (*Figure 2-3*). The site is surrounded by three paved roads: SH 361, Avenue A, and Tiner Lane (*Figure 2-7*). The 155 units would be townhouse-style units. A density of approximately 6 units per acre (0.4 ha) is proposed for the planned PPV development (U.S. Navy, 2000x). This site is an approximate 4.1-mile (6.6-km) commute from NAVSTA Ingleside.

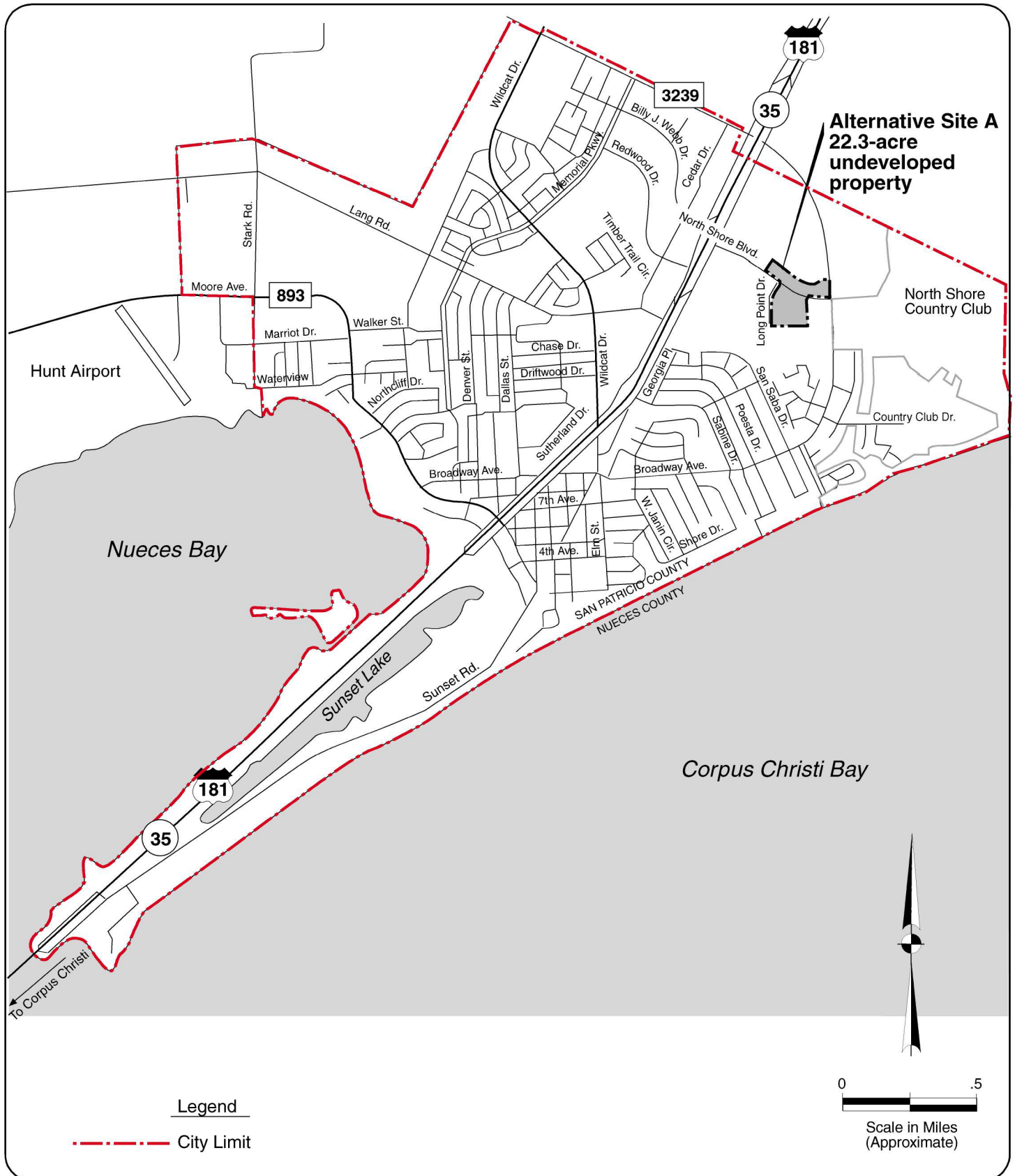


Figure 2-2. Vicinity Map - Alternative Site A, Portland

Note: Multiply by 1.60935 to convert miles to kilometers.
 Multiply by 0.4047 to convert acres to hectares.

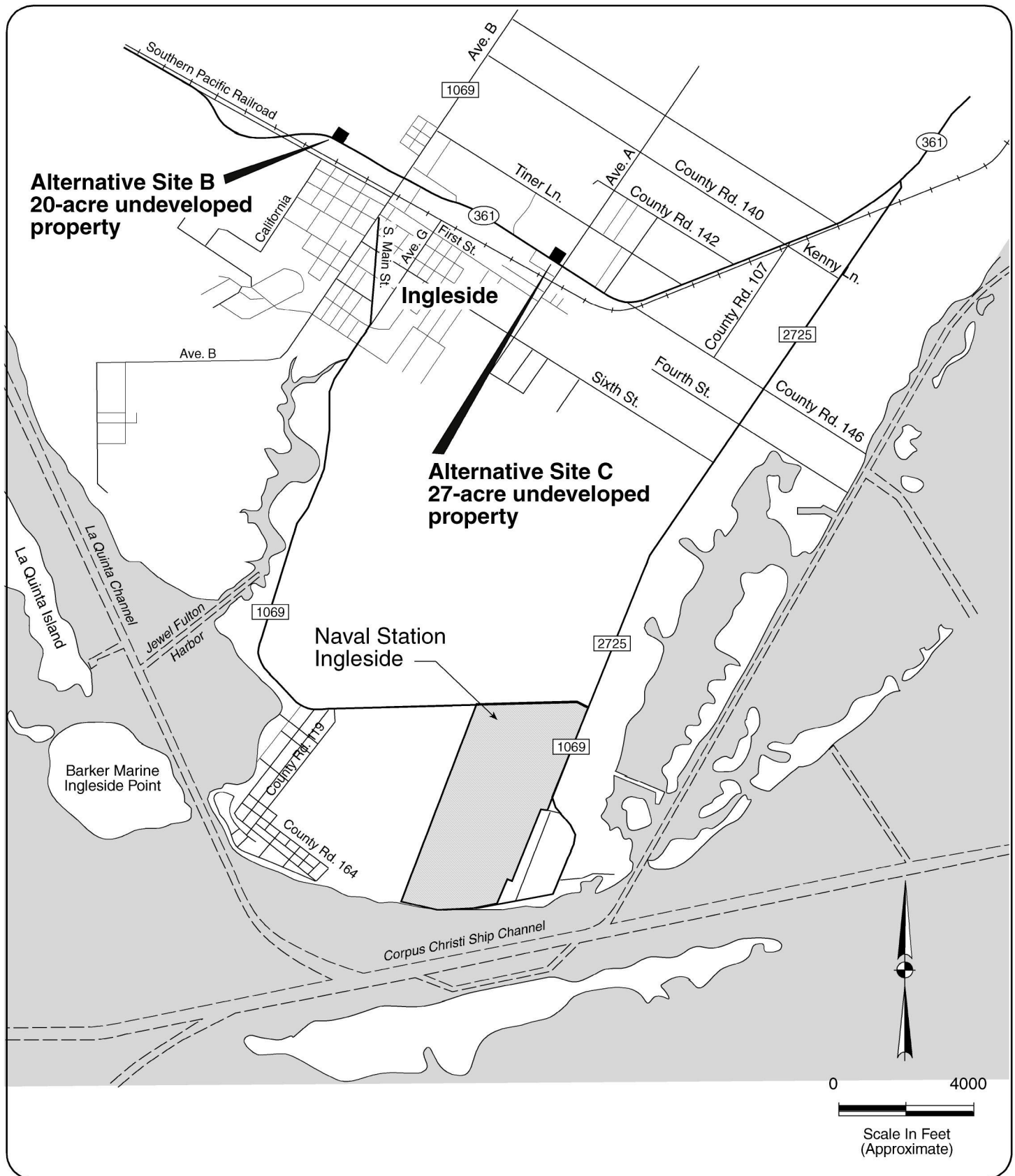


Figure 2-3. Vicinity Map - Alternative Sites B and C, Ingleside

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

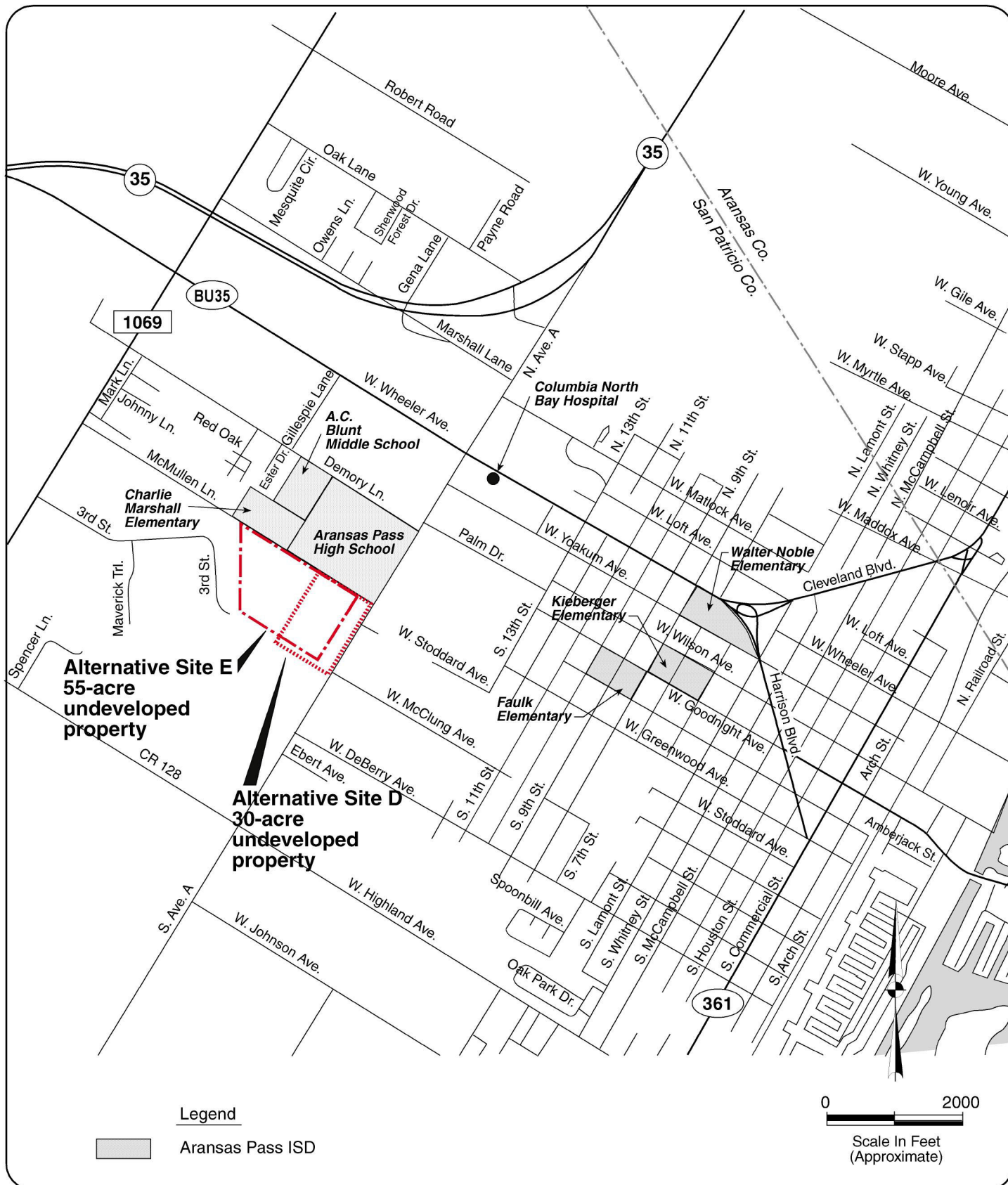


Figure 2-4. Vicinity Map - Alternative Sites D and E, Aransas Pass

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

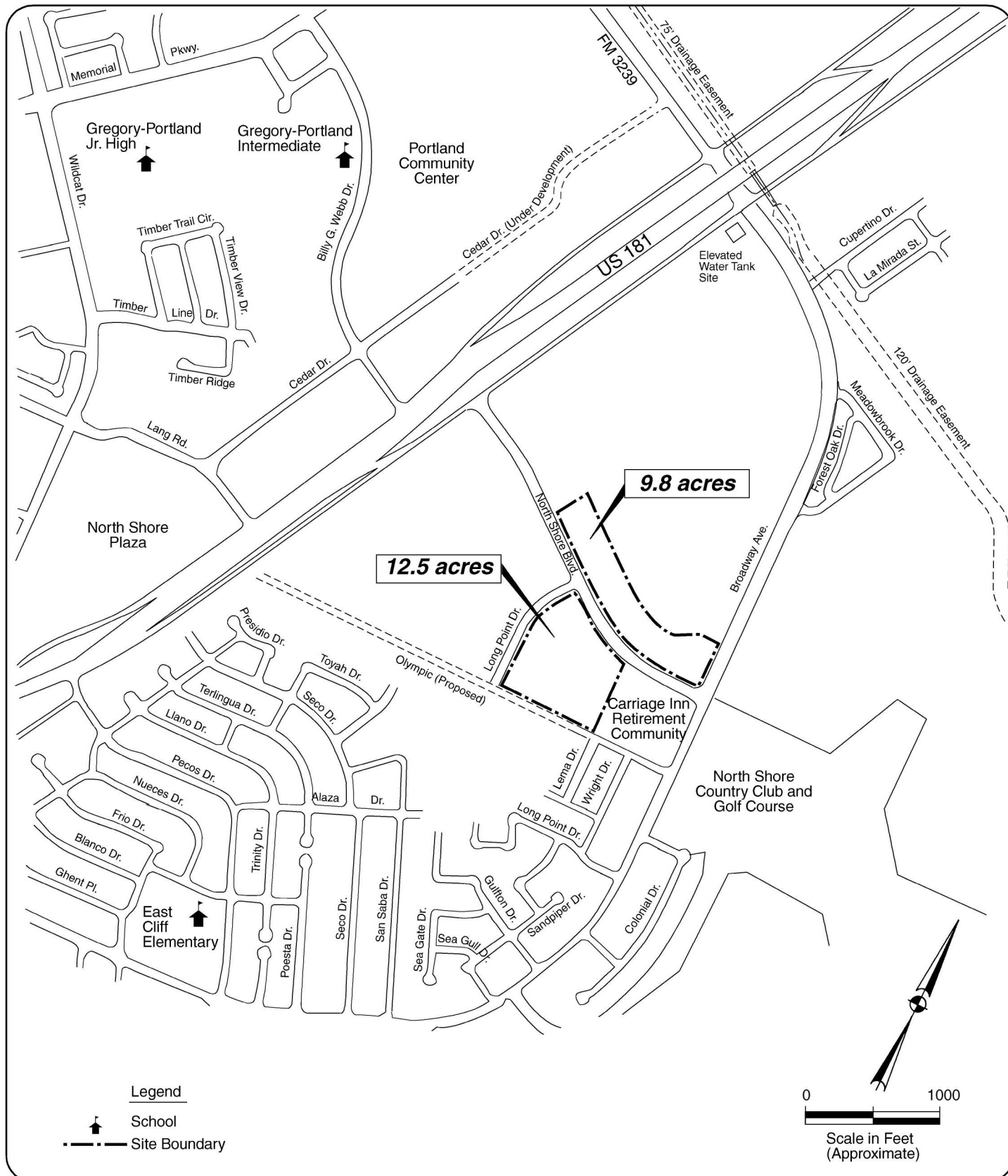


Figure 2-5. Site Map - Alternative Site A, Portland
(U.S. Navy, 2000w)

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

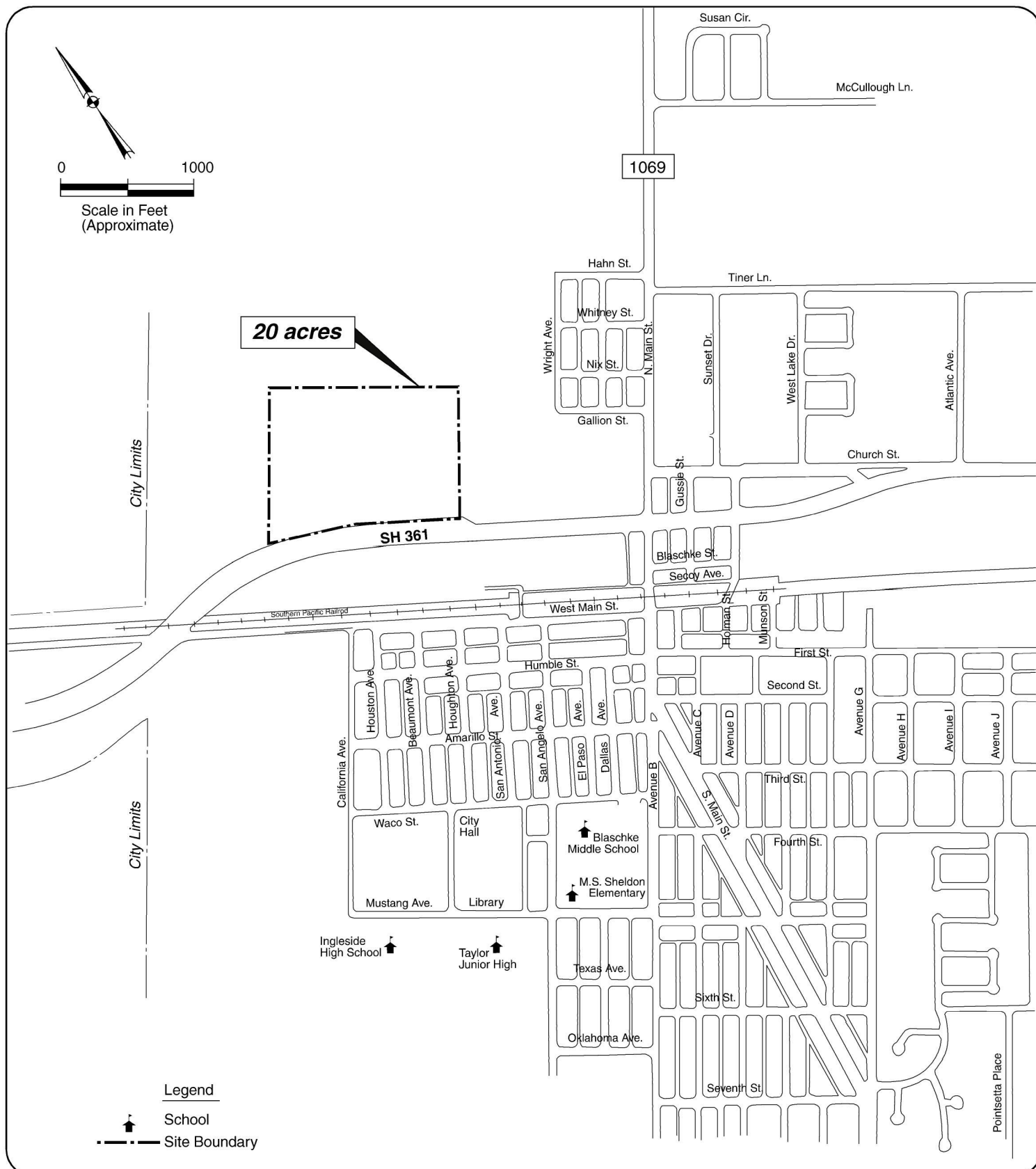


Figure 2-6. Site Map - Alternative Site B, Ingleside

Note: Multiply by 0.3048 to convert feet to meters.

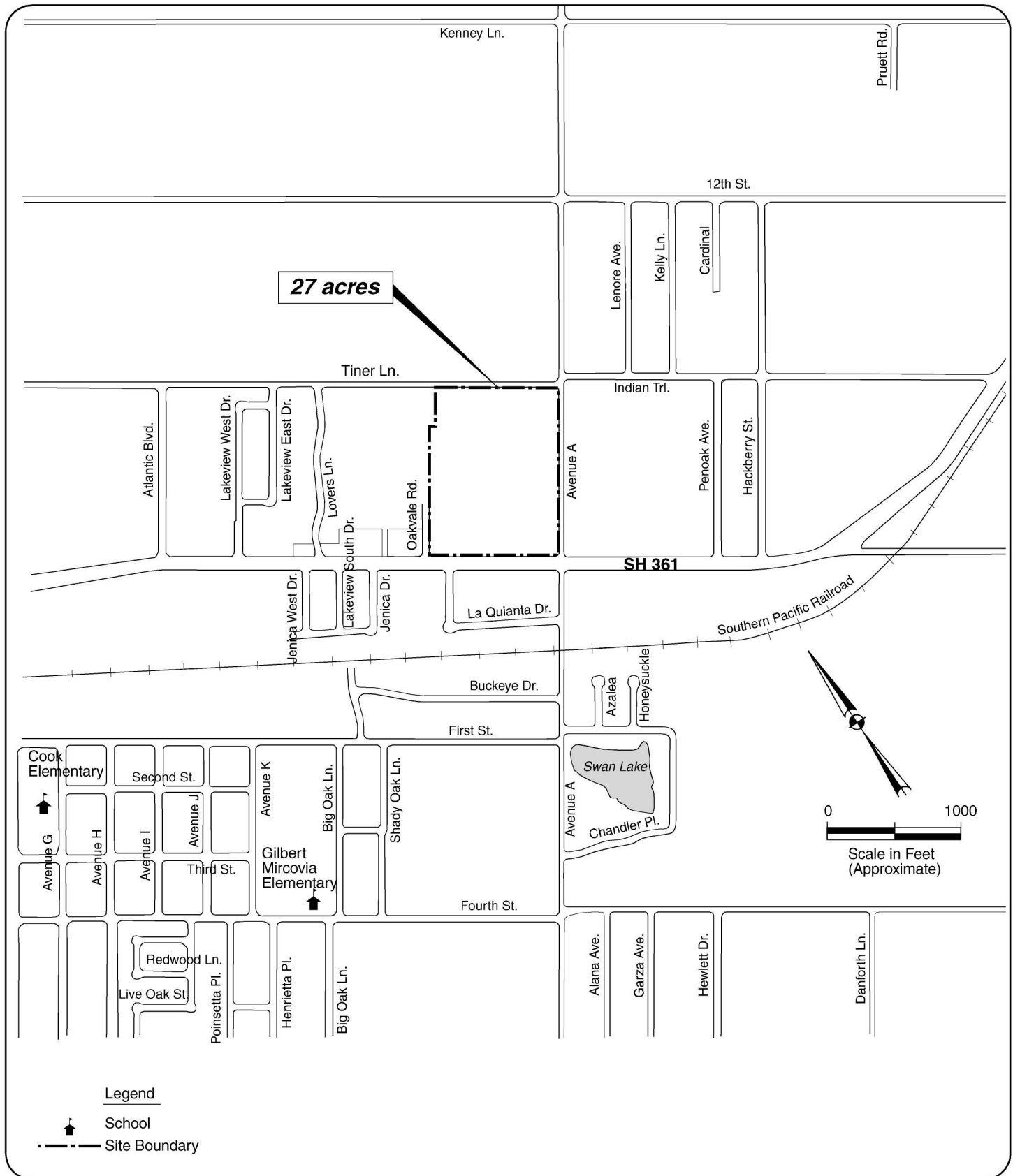


Figure 2-7. Site Map - Alternative Site C, Ingleside
(U.S. Navy, 2000x)

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

2.2.4 Alternative Site D – Aransas Pass 30 acres

Alternative Site D, consisting of 30 acres (12 ha), is located just outside the incorporated city limits of Aransas Pass, Texas (*Figure 2-4*). The site is bounded by Avenue A to the southeast and McMullen Lane to the northeast (*Figure 2-8*). Charlie Marshall Elementary, A.C. Blunt Middle School, and Aransas Pass High School are located adjacent to the site, on the north side of McMullen Lane. The 155 units would be townhouse-style units. A density of approximately 5 units per acre is proposed for the planned PPV development (U.S. Navy, 2000v). This site is an approximate 8-mile (13-km) commute from NAVSTA Ingleside.

2.2.5 Alternative Site E – Aransas Pass 55 acres

Alternative Site E, consisting of 55 acres (20 ha), is located just outside the incorporated city limits of Aransas Pass, Texas (*Figure 2-4*). The site is bounded by Avenue A to the southeast and McMullen Lane to the northeast (*Figure 2-8*). Charlie Marshall Elementary, A.C. Blunt Middle School, and Aransas Pass High School are located adjacent to the site, on the north side of McMullen Lane. The 155 units would be townhouse-style units. A density of approximately 5 units per acre is proposed for the planned PPV development (U.S. Navy, 2000v). This site is an approximate 8-mile (13-km) commute from NAVSTA Ingleside.

2.3 NO ACTION

The CEQ's regulations implementing NEPA require that a No Action Alternative be evaluated. The No Action Alternative evaluated by this EA consists of not developing a PPV partnership for the South Texas Region. Implementation of the No Action Alternative would result in no change to the military family housing shortage in the South Texas area. No new housing units would be constructed and the existing housing units would not be privatized, renovated, or demolished. The Navy would continue to own and maintain the existing housing units and associated land, facilities, and utilities at NAS Corpus Christi. The No Action Alternative would fail to provide affordable, adequate housing to qualified military personnel, particularly junior enlisted personnel and their families, stationed in the South Texas Region. The impacts of the implementation of the No Action Alternative are addressed in *Sections 4.1, 4.2, and 4.3*.

2.4 ALTERNATIVE SITES ELIMINATED FROM DETAILED ANALYSIS

The *Master Plan for Naval Complex Corpus Christi, Texas*, updated in 1996, and information provided by the potential PPV partners initially identified several potential locations for the proposed PPV housing units. Regardless, no reasonable alternative locations were identified through land planning performed at NAS Corpus Christi. Sites briefly considered were encumbered by conditions that precluded residential development. The conditions that ultimately precluded future development ranged from areas unsuitable for development due to potential release or disposal of petroleum products to areas within the 100-year floodplain or those not designated for housing or residential development.

Three of the five alternative off-station PPV housing sites identified in the vicinity of NAVSTA Ingleside were eliminated from further consideration and detailed analysis.

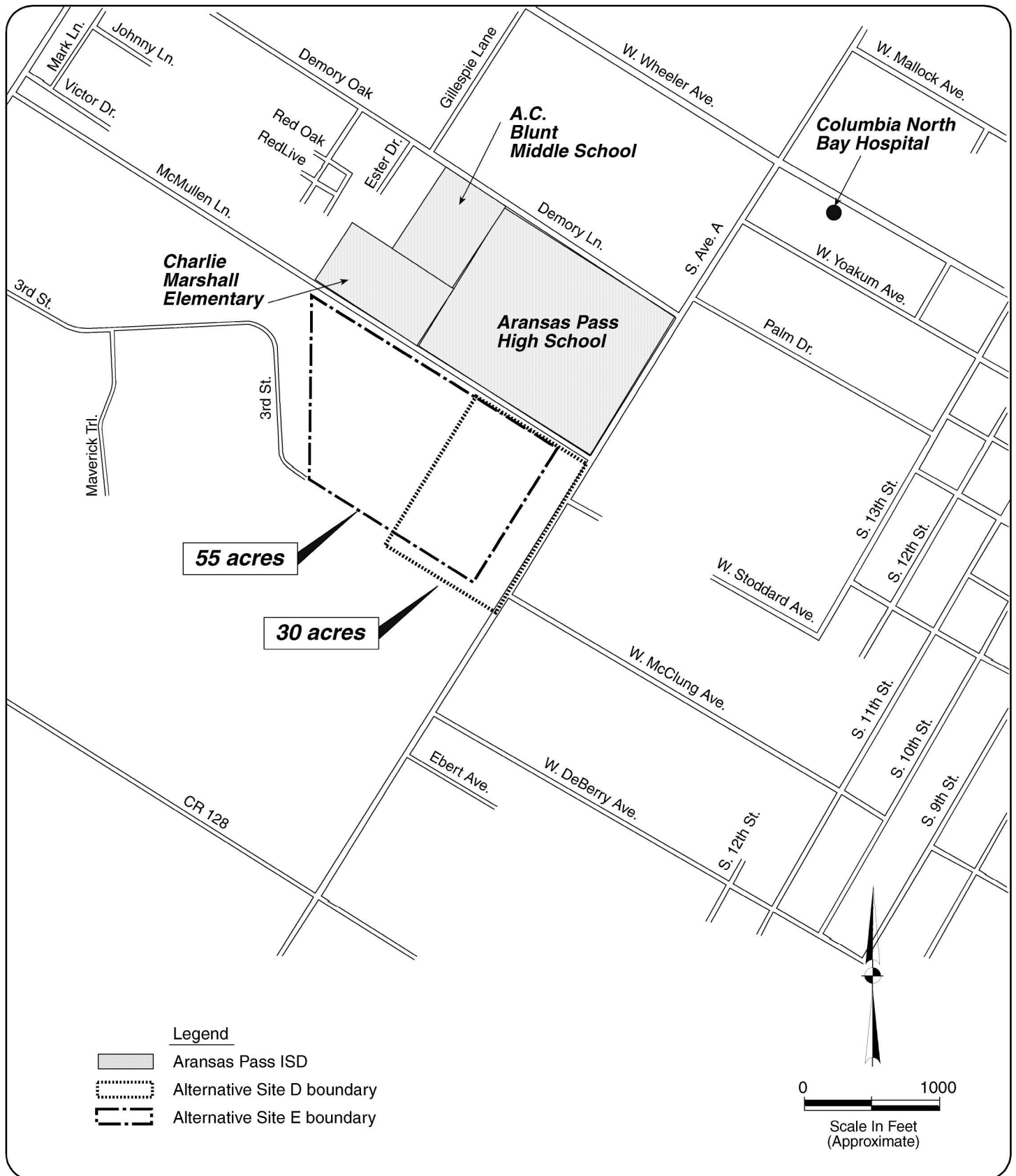


Figure 2-8. Site Map - Alternative Sites D and E, Aransas Pass
(U.S. Navy, 2000v)

Note: Multiply by 0.3048 to convert feet to meters.
Multiply by 0.4047 to convert acres to hectares.

- Alternative Site A site was eliminated when the land was purchased for town home development and taken off the market.
- Approximately one-half of Alternative Site B is located within the 100-year floodplain. In addition, the property served as a local drainage area for stormwater. As a result, the site was discarded by the potential PPV partner as a viable housing development alternative and was not considered further.
- Alternative Site D was eliminated from further consideration because Alternative Site E, which is 25 acres larger, offers better opportunities for development in an environmentally sensitive manner. Development of the proposed housing project at the larger site could be planned with less impact to natural resources as compared to Alternative Site D.

Table 2-2 presents a comparison of the two alternatives that are evaluated in detail in this EA: Alternative Site C and Alternative Site E. In *Sections 3* and *4* of this EA, these two remaining sites are described as the Ingleside site and the Aransas Pass site.

TABLE 2-2 SUMMARY AND COMPARISON OF PROPOSED ACTION ALTERNATIVES

Alternative	Operational Factors				Sensitive Environment	
	Distance from NAVSTA Ingleside	Size of Tract	Will zoning have to be changed (at least in part)?	Will utilities have to be constructed or extended?	Live Oak-Red Bay Habitat	Acreage of Wetlands
Alternative Site C (Ingleside, Texas)	4.1 miles (6.6 km)	27 acres (11 ha)	Yes	Yes	27 acres (11 ha)	0
Alternative Site E (Aransas Pass, Texas)	8 miles (13 km)	55 acres (22 ha)	No	Yes	50 acres (20 ha)	0.5 acre (0.2 ha)

3.0 AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

This section contains a description of the existing environment at the NAS Corpus Christi and the Ingleside area. It provides information to serve as a baseline from which to identify and evaluate environmental consequences resulting from the proposed action. Resources evaluated are presented in three major categories and represent major environmental components of the area: physical, biological, and socioeconomic.

3.1 PHYSICAL ENVIRONMENT

3.1.1 Facilities

NAS Corpus Christi

The on-station family housing areas at NAS Corpus Christi (*Figure 2-1*) considered in this PPV are located within the City of Corpus Christi. There are four major housing groups: Group 1, SOQs; Group 2, MOQs; Group 3, FY 66 Housing; and Group 4, Laguna Shores Housing. Public grounds in the housing areas consist of basketball courts and playgrounds (i.e., “tot lots”). All of the public grounds have been remodeled. The original metal playground equipment has been replaced. Playground and basketball courts have borders and structures made of polyurethane lumber. The playgrounds are lined with a minimum of a 1-foot (0.30-meter [m]) layer of clean pine bark mulch, while basketball courts have a 4-inch (10.2-centimeter [cm]) concrete layer. The backyard fencing of all on-station housing units has been replaced with white polyurethane fences. A description of each housing group included in the proposed action follows (U.S. Navy, 1999e, 2000t, and 2000u).

Group 1 - Senior Officers Quarters (SOQs), Total Homes: 15

SOQs 2 through 10, King Drive. SOQs 2 through 10 are 4-bedroom (the fourth bedroom is detached), 1-story dwellings with an asymmetrical floor plan of wood frame construction with concrete slab foundations. The exteriors of these homes are covered with asbestos siding. These dwellings were constructed in 1941 and are eligible for listing in the National Register of Historic Places as contributing structures to the King Drive Historic District. These dwellings occupy approximately 10 acres (4 ha).

Hospital SOQs, HA through HE, Ninth Street Vicinity. HB through HE units are 4-bedroom (the fourth bedroom is detached), 1-story, dwellings with an asymmetrical floor plan, wood-frame construction, and pier and beam foundations. HA is a 2-story, 4-bedroom asymmetrical plan, Colonial Revival style dwelling with wood-frame construction, and pier and beam foundation. The exteriors of these homes are covered with asbestos siding. These dwellings were constructed in 1941 and are eligible for listing in the National Register of Historic Places as contributing structures to the Ninth Street Historic District. These dwellings occupy approximately 4.6 acres (1.8 ha).

SOQ 12, Avenue D. SOQ 12, the Ernest Powell House, is a 4-bedroom (the fourth bedroom is detached), 1-story, Tudor Revival style dwelling (with two support buildings L-1 and L-2) of stone construction with a pier and beam foundation. The exterior is covered with sandstone veneer with random patterning. This dwelling was constructed in 1936 and is eligible for listing in the National Register of Historic Places as a contributing structure to the Lexington Boulevard Historic District. This dwelling occupies approximately 1.16 acre (0.47 ha).

Group 2 - Married Officers Quarters (MOQs), Total Units: 72

MOQs 14 through 31, Yorktown Drive. MOQs 14 through 31 are 3-bedroom, Colonial Revival style, rectangular plan fourplexes with wood frames, and pier and beam foundations. In the rear of each fourplex, there is a detached garage with maid's quarters and an eight-car garage. The exterior is covered in asbestos siding. These dwellings were constructed in 1942 and occupy approximately 14 acres (5.66 ha).

Group 3 - Fiscal Year 1966 (FY 66) Housing, Total Units: 350

Field Grade Officers' Quarters and Enlisted Persons Housing, Buildings 2600 through 2651, Ocean Drive. Buildings 2600 through 2651 are 1-story, 4-bedroom, rectangular plan, 2-family housing units with wood frames, and concrete pier and beam foundations. There are also 2-story, 3-bedroom units. These dwellings were constructed in 1968 and occupy 27 acres (11 ha).

Enlisted Married Housing, Buildings 2652 through 2717, Avenue D. Buildings 2652 through 2717 are a combination of 1-story and 2-story multiple family units of rectangular plan. The exterior of these buildings is wood plank, which is being covered on some models with a molded cement board. There are 2-, 3-, and 4-bedroom units—a combination of individual duplexes and fourplexes. These dwellings were constructed in 1968 and occupy approximately 31 acres (12.5 ha).

Group 4 - Laguna Shores Housing (Fiscal Year 1995), Total Units: 100

Enlisted Married Housing, Buildings 1 through 50, Laguna Shores. The new Laguna Shores housing is a combination of duplex style 2-story townhouses and 1-story handicapped housing. There are ninety-five 2-bedroom units, with five wheelchair-accessible units. The exterior of these buildings is stucco. These dwellings were constructed in 1997 and 1998 to replace the previous 1941-era Enlisted Married Housing quarters. These dwellings occupy approximately 22 acres (8.9 ha).

Other Facilities

Mobile Home Housing, Viking Drive. This mobile home housing area is located on a small half-circle drive, Viking Drive, off Dimmit Drive. There are 28 available hookups and cement foundations for privately owned trailers. The area is approximately 5.2 acres (2.02 ha).

3.1.2 Earth Resources

Topography

The Corpus Christi Bay area consists of flat coastal prairies, chaparral pastures, and farmland. Typical elevations on the mainland generally range from 5 to 25 feet (1.5 to 7.6 m), National Geodetic Vertical Datum (NGVD). The general terrain of this coastal county is flat, with slopes of less than one percent. The land surface in this coastal area slopes in the direction of the Gulf of Mexico and is dissected by bayous, rivers, and creeks (U.S. Navy, 1999b).

NAS Corpus Christi

The on-station NAS Corpus Christi housing areas are located on the Oso Creek Northeast, Texas, 7.5-minute topographic quadrangle map (U.S. Geological Survey [USGS], 1975a). The elevation of

NAS Corpus Christi ranges from 15 feet (4.57 m) NGVD in the center of the station, to sea level at Laguna Madre, Corpus Christi Bay, and Oso Bay. The housing areas are located on the east side of NAS Corpus Christi. Drainage areas are nearly level, with a gentle slope in the direction of Laguna Madre and Corpus Christi Bay. Surface drainage is in the general direction of Laguna Madre from station housing areas except along King Drive. Surface drainage flows in the direction of Corpus Christi Bay from the King Drive housing area (U.S. Navy, 1999b).

Alternative Site C - Ingleside

Alternative Site C is located on the Aransas Pass, Texas, 7.5-minute topographic quadrangle map (USGS, 1975c). The elevation of the site is 25 feet (7.62 m) NGVD and there is little relief. No engineered drainage is located on the site. No standing water was observed on the site (TC&B, 2000a).

Alternative Site E - Aransas Pass

Alternative Site E is located on the Aransas Pass, Texas, 7.5-minute topographic quadrangle map (USGS, 1975c). The elevation of the site ranges from 25 feet (7.62 m) NGVD over the majority of the property, to 30 feet (9.14 m) in a small area of the southernmost corner of the property. The property is a local high point and surface water drainage could flow to the northeast or to the northwest. Standing water is present in a small pond or “stock tank” that extends from the northeast corner of the property through culverts beneath McMullen Lane to the Aransas Pass High School property.

Geology

The geologic units underlying the Corpus Christi region consist of Miocene and younger unconsolidated deposits that lie above the Vicksburg-Jackson confining unit (USGS, 1996). Oil and gas is produced in the area at many established fields. Deposits of gypsum, lignite, caliche, and gravel are also mined in the area (U.S. Navy, 1985). This region is underlain by the Beaumont Formation, the Montgomery Foundation, the Lissie Foundation, and the Goliad Sand (U.S. Navy, 1994a). Surface and near-surface deposits include fill material and dredged material that have been the source of constructed land (U.S. Navy, 1997b).

Radon is a naturally occurring gas that is produced from sediments containing uranium deposits that occur in Texas. The U.S. Environmental Protection Agency (U.S. EPA) indoor action level for radon in air is four picoCuries per liter (U.S. Navy, 1999e). In 1994, housing at NAS Corpus Christi was screened for radon in accordance with the Navy Radon Assessment and Mitigation Program. None of the housing units exhibited concentrations above the U.S. EPA action level. According to reports issued by the U.S. EPA that summarize the results of a radon investigation conducted in 1990 and 1991, radon concentrations detected in homes located in San Patricio County did not exceed the U.S. EPA action level (U.S. Navy, 2000v).

Soils

NAS Corpus Christi

Galveston and Mustang fine sands underlie the majority of the NAS Corpus Christi housing areas, with Made land underlying the Laguna Shores housing area (Natural Resources Conservation Services [NRCS], 1992).

Galveston and Mustang fine sands consist of deep, loose soils that developed in wave-deposited sands from the Gulf of Mexico (NRCS, 1992). This soil is found in nearly level areas on which there are many low dunes 3 to 10 feet (0.914 to 3.05 m) high. Slopes can range from zero up to eight percent. This soil is composed of loose fine sand to approximately 3 feet (0.914 m) below surface over saturated sand underlain by clayey material. Galveston and Mustang fine sands in Nueces County are suitable for the development of homes. The Mustang fine sand portion of this association is considered hydric by the NRCS when located in a salt marsh habitat, which is not found on the air station (NRCS, 1993). The Galveston fine sand portion of the association is not considered hydric by NRCS. Galveston and Mustang fine sands are not considered prime farmland soils (NRCS, 1998).

Made land underlies the Laguna Shores housing area, and consists of dredged materials, shells, sand, and mud from lagoon floors and bays (NRCS, 1992). This material generally contains a high quantity of salt. In general, the NRCS recommends that the suitability of this land for residential development is determined on a case-by-case basis. For NAS Corpus Christi, the Navy has deemed the existing Laguna Shores housing area suitable for housing development.

Alternative Sites C and E – Ingleside and Aransas Pass

Alternative Sites C and E are underlain by Galveston and Mustang fine sands, which consist of deep, nearly level, somewhat poorly drained soils in this county (NRCS, 1979). Surface runoff is very slow. Galveston and Mustang fine sands in San Patricio County are severely limited for residential development, due to wetness and the sandy surface layer. The Mustang fine sand portion of this association is considered hydric by the NRCS when located in a salt marsh habitat, which is not found on these sites (NRCS, 1993). The Galveston fine sand portion of the association is not considered a hydric soil by NRCS. Galveston and Mustang fine sands are not considered prime farmland (NRCS, 1998).

3.1.3 Air Resources

The U.S. EPA has established primary and secondary standards known as the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, ozone, nitrogen dioxide, lead, particulate matter 10 micrometers or less in diameter, and sulfur dioxide. The NAAQS provide the framework for ozone, carbon monoxide, and particulate matter attainment provisions in Title I of the 1990 Clean Air Act Amendments.

The 1990 Clean Air Act Amendments define how the U.S. EPA and states designate regions as *attainment*, *nonattainment*, *maintenance*, or *unclassifiable* with respect to NAAQS. The Amendments allow a redesignation if justified by air quality measurements but require the state to submit an approved maintenance plan showing that the NAAQS will be maintained for at least 10 years. State Implementation Plans must address pollution control for both clean air areas (to maintain air quality), and for areas that are in violation of the NAAQS (to assure that ambient standards are attained in the future). Inventories are required for all pollutants that are precursors to the pollutants regulated under the NAAQS. A broad category of chemicals called volatile organic compounds contributes to ozone nonattainment. Nitrogen oxide emissions can also contribute to ozone concentrations through complex interactions with volatile organic compounds. Both of these pollutants therefore contribute to ozone nonattainment and would be listed in an ozone nonattainment inventory.

Two special air protection measures have been implemented for Nueces and San Patricio Counties. One protection measure includes the use of particulate matter best management practices to suppress

or limit the release of dust emissions to the environment (30 Texas Administrative Code [TAC], Chapter 111, Subchapter A). The other measure limits the volatile organic compound content of asphalt used in paving projects (30 TAC, Chapter 115, Subchapter F).

NAS Corpus Christi

The climate of Corpus Christi is moderately warm and humid in the summer, and cool and cloudy in the winter, with an average temperature of 72.6 degrees Fahrenheit (°F) (22.6 degrees Celsius [°C]) (Central and South West Economic Development Department, 1999a). The average annual precipitation in Corpus Christi is 27.8 inches (70.6 centimeters [cm]).

Nueces County is in attainment for NAAQS criteria pollutants; therefore, the proposed federal action will not require a conformity analysis, according to the General Conformity Rule (40 Code of Federal Regulations [CFR] 6, 51, and 93). The Texas Natural Resource Conservation Commission (TNRCC) classifies Corpus Christi as in flexible attainment for the criteria pollutant ozone (TNRCC, 2000a). Communities in flexible attainment of the ozone standard voluntarily implement ozone-reduction strategies.

In July 1997, the U.S. EPA established a new ozone standard. The new standard states that the three-year average of the annual fourth-highest daily eight-hour average concentration, at the same monitor, shall be no greater than 85 parts per billion (ppb) (40 CFR 50). Nueces County's fourth highest 8-hour average for 1996 and 1997 was below 85 ppb, but it was above 85 ppb in 1998 and 1999 (TNRCC, 1998; TNRCC, 2000a). When data for the year 2000 ozone readings are available, the U.S. EPA will evaluate the ozone readings for 1997 through 1999 and determine if Nueces County will remain in attainment for ozone. If Nueces County is designated nonattainment for ozone, the State of Texas will be required to submit an attainment plan for the eight-hour nonattainment areas, including possibly Nueces County, by 2003. The attainment plan must be designed to attain the eight-hour standard by the year 2010.

NAS Corpus Christi (U.S. EPA Facility Identification Number TX7170022787) produces less than 100 tons (90,718 kilograms [kg]) of regulated air emissions per year (U.S. Navy, 1999e). Under U.S. EPA's Toxic Release Inventory program, NAS Corpus Christi reported a total of 24 tons (21,754 kg) of regulated air emissions in 1996, including freon and methyl ethyl ketone. The housing properties at NAS Corpus Christi have no regulated air emissions.

Alternative Sites C and E – Ingleside and Aransas Pass

The climate of the Aransas Pass and Ingleside site locations is moderately warm and humid in the summer, and cool and cloudy in the winter. Aransas Pass, with an average temperature of 71°F (21.44°C), has an average annual precipitation of 30.2 inches (76.7cm) (Aransas Pass Chamber of Commerce, 2000b). Statistics for Ingleside are similar, with an average temperature of 72°F (22.2°C) and an average annual precipitation of 30 inches (76.2 cm) (Central and South West Economic Development Department, 1999b).

According to the TNRCC, San Patricio County is in attainment for all criteria pollutants (TNRCC, 2000a); therefore, the proposed federal action will not require a conformity analysis, according to the General Conformity Rule (40 CFR 6, 51, and 93). The sites are not developed and have no regulated air emissions.

3.1.4 Sound Environment

The noise environment is described using a measure of the cumulative noise exposure (i.e., day-night average sound level [DNL]) that results from all aircraft operations at NAS Corpus Christi. DNL takes into consideration the time of day that events occur. Noise that occurs between 10:00 p.m. and 7:00 a.m. is weighted more heavily than noise during the day to account for the difference in human noise perception during nighttime hours. Within the 65 DNL contour, noise levels are similar to an urban environment. Within the 75 DNL contour, the noise levels would be similar to the downtown area of a major city (U.S. Navy, 1991).

NAS Corpus Christi

The housing areas at NAS Corpus Christi are not major generators of noise. Since the existing housing areas are located at a naval air station, the sound environment in the area is dominant by noise from aircraft operations. The latest aircraft noise survey for NAS Corpus Christi was conducted in 1995 (U.S. Navy, 1995b). *Figure 3-1* presents the computer-generated DNL (recorded in decibels [dB]) contours developed based on the average busy day operations and related operations for NAS Corpus Christi and the surrounding area.

Residential development in areas below the 65 DNL noise contour is a compatible land use according to DOD Air Installation Compatible Use Zones (AICUZ) program guidelines. AICUZ zones designate lands close to air installations where certain kinds of use and development are incompatible with current and anticipated Navy operations from a safety perspective, a noise perspective, or both. Noise concerns arise where the Navy believes users of the area would find noise from aircraft operations unacceptable; however, noise reduction controls can be used to lower the dB intensity to an acceptable level.

SOQs 1 through 10, the Laguna Shores housing, the proposed housing area, the MOQs, the 28 mobile home pads, the BOQs and the BEQs at NAS Corpus Christi are located beyond the mapped 60 DNL noise contour line (U.S. Navy, 1995b). The mapped 60 DNL contour line crosses through the extreme southwestern portion of the FY 66 housing units although the majority of these units are outside the area of concern. The Hospital SOQs, the southwestern-most FY 66 housing units, and SOQ 12 lie between the 60 and 65 DNL noise contours.

Alternative Site C - Ingleside

No aircraft or industrial operations that could affect the noise environment are conducted at or near Alternative Site C. Land use surrounding the Ingleside site is rural residential to the north, east, and west, while SH 361 is located immediately south of the site. Noise from automobile and truck traffic would be 74 dB at the right-of-way. Excluding noise generated from the highway, the noise level at the site would be typical of an urban residential area, and would vary from approximately the low-50 to mid-60 dB level, depending on the time of day and the on-going activities.

Alternative Site E - Aransas Pass

No aircraft or industrial operations that could affect the noise environment are conducted at or near Alternative Site E. The site is surrounded by undeveloped properties on the east, south and west and the Aransas Pass High School is located immediately northeast of the site. The property is accessed by Avenue A on the east and McMullen Lane on the north. The noise level at the site would be typical of urban residential areas and would vary from approximately the low-50 to mid-60 dB level,

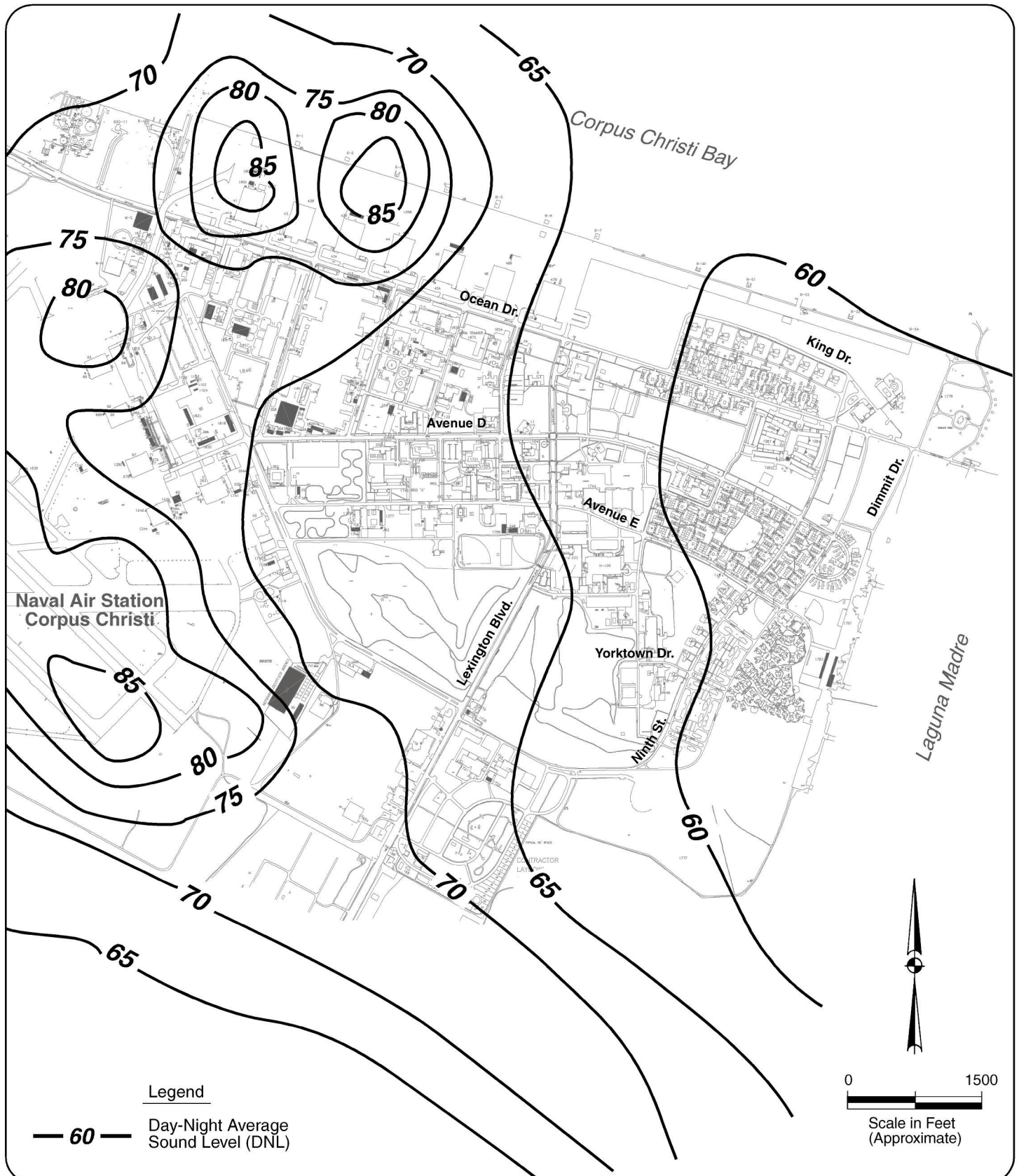


Figure 3-1. Average Busy-Day DNL Contours - NAS Corpus Christi
(U.S. Navy, 1995a and 2000j)

Note: Multiply by 0.3048 to convert feet to meters.

depending on the time of day and on-going activities. School activities, including student football games at the stadium, could temporarily affect the noise environment.

3.1.5 Water Resources

Surface Water

NAS Corpus Christi

NAS Corpus Christi is located within the Nueces-Rio Grande Coastal Basin. The closest surface water bodies to NAS Corpus Christi that are monitored and classified by the TNRCC are Laguna Madre (Segment 2491), Corpus Christi Bay (Segment 2481), and Oso Bay (Segment 2485) (TNRCC, 1997) (*Figure 1-1*).

Water from the majority of the housing area drains into the Laguna Madre (Segment 2491). The TNRCC classifies Laguna Madre as “effluent quality limited,” with designated water uses of contact recreation, exceptional aquatic life, and oyster waters (TNRCC, 1997). This water body is hypersaline, caused by the absence of freshwater streams, curtailed water circulation, and shallow depth (U.S. Navy, 1997b). There are a total of 26 permitted wastewater discharges to Laguna Madre (TNRCC, 1997). Depressed dissolved oxygen levels and fecal coliform levels limit water uses in portions of the water body.

Water from the King Drive housing areas drains into Corpus Christi Bay (Segment 2481) through an engineered stormwater management system. TNRCC classifies Corpus Christi Bay as “water quality limited” due to water quality standards violations, with designated water uses of contact recreation, exceptional aquatic life, and oyster waters (TNRCC, 1997). NAS Corpus Christi discharges water and stormwater to the bay under conditions of the National Pollutant Discharge Elimination System (NPDES) permit number TX0007889. There are a total of 14 permitted wastewater discharges to Corpus Christi Bay, including NAS Corpus Christi. Arsenic, barium, and zinc levels in sediment are elevated.

The western portion of the naval station is adjacent to Oso Bay (Segment 2485). The TNRCC classifies Oso Bay as “water quality limited” due to water quality standards violations, with designated water uses of contact recreation, exceptional aquatic life, and oyster waters (TNRCC, 1997). There are a total of nine permitted wastewater discharges to Oso Bay. Due to elevated fecal coliform levels, the oyster water use is not supported and the contact recreation use is partially supported.

Alternative Sites C and E – Ingleside and Aransas Pass

Aransas Pass and Ingleside are located within the San Antonio-Nueces Coastal Basin (TNRCC, 1997). No major surface water bodies are located in the immediate vicinity of these sites. There are two small ponds or “stock tanks” located on the Aransas Pass site, one inside the southeastern property boundary and one partially within the eastern corner of the property (U.S. Navy, 2000v). The easternmost surface water features extend from the northeast corner of the property through culverts beneath McMullen Lane to the Aransas Pass High School property.

The closest surface water body that is monitored and classified by the TNRCC is Aransas Bay (Segment 2471) (TNRCC, 1997). Alternative Sites C and E are located over a mile west of Aransas

and Redfish Bay (Segment 2471) but stormwater and surface water runoff ultimately discharge to Aransas Bay. The TNRCC has no water quality concerns for Aransas Bay (TNRCC, 1997). There are a total of two permitted wastewater discharges to Aransas Bay, and arsenic and phosphorous levels are increasing.

Groundwater

The Gulf Coast Aquifer, part of the Gulf Coast lowlands aquifer system, lies beneath NAS Corpus Christi and NAVSTA Ingleside (TNRCC, 1996; USGS, 1996). Water flow within the aquifer is in a southeasterly direction. The groundwater available in the project area has been used locally for crops, livestock, and industry. Saltwater intrusion restricts groundwater use as a major source of potable water. Groundwater withdrawal is restricted to less than a few million gallons per day in the Corpus Christi Bay area.

Floodplains

NAS Corpus Christi

The boundaries of NAS Corpus Christi along Corpus Christi Bay and the Laguna Madre are within the 100- and 500-year floodplains (Federal Emergency Management Agency [FEMA], 1985a; FEMA, 1985b; FEMA, 1985c). Laguna Shores is located within the 100-year floodplain Zone A, with base flood elevations of 10 feet (2.74 m) NGVD (*Figure 3-2*). The 100-year floodplain describes a flood hazard area, one that would be inundated by a flood event having a 1 percent chance of occurring. Floodplain areas in Zone A are subject to a 100-year flood event. SOQ 12, the mobile home pads, the eastern portion of the FY 66 housing area, the Hospital SOQs, the MOQs, and the proposed housing area are located within the 500-year floodplain.

The City of Corpus Christi has adopted FEMA guidelines regarding construction within floodplains in its Building Code, Chapter 13, Article 5 *Flood Hazard Prevention* (City of Corpus Christi, 2000a). According to the City of Corpus Christi Building Code, structures built within Zone A would be required to be constructed at or above base flood elevations, and this elevation could be achieved by using fill. The Building Code does not address those structures built within the 500-year floodplain, as the City of Corpus Christi considers such locations not prone to flooding.

Alternative Sites C and E – Ingleside and Aransas Pass

Alternative Sites C and E lie entirely outside the 100- and 500-year floodplains (FEMA, 1985d, 1985e, 1985f, and 1985g). The cities of Ingleside and Aransas Pass have adopted FEMA guidelines regarding construction in floodplains for developments located within the city limits.

3.1.6 Hazardous Materials/Hazardous Waste

NAS Corpus Christi

An Environmental Baseline Survey (EBS) of the housing areas and proposed housing area at NAS Corpus Christi was completed in March 1999. Based on the EBS, NAS Corpus Christi is a registered Resource Conservation and Recovery Act (RCRA) large quantity generator and treatment, storage, and disposal facility (U.S. EPA Facility Identification Number TX7170022787) (U.S. Navy, 1999e). As a large quantity generator, NAS Corpus Christi handles over 2,205 pounds (1,000 kg) of

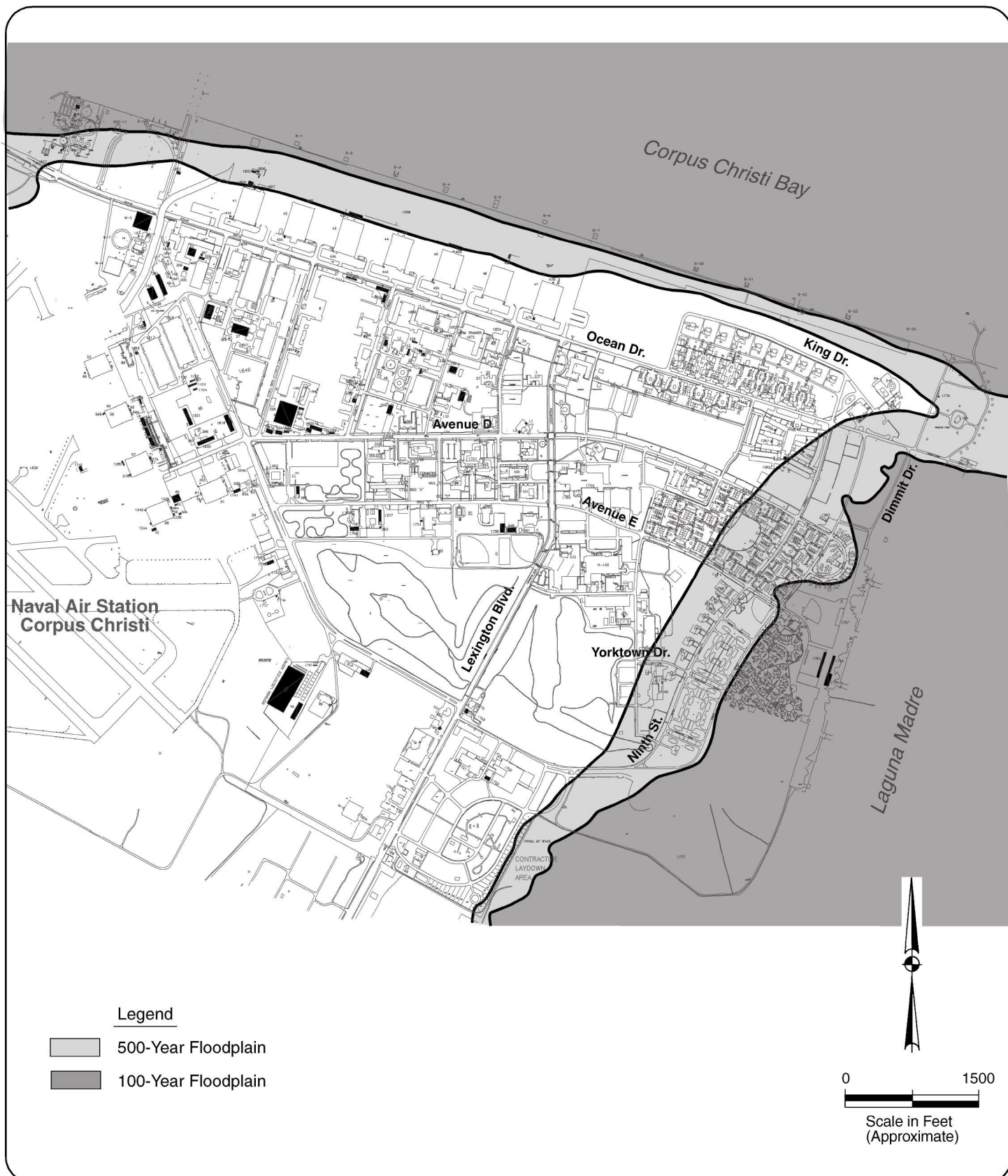


Figure 3-2. Floodplain Areas - NAS Corpus Christi (FEMA, 1985a, 1985b, and 1985c; U.S. Navy 2000j)

Note: Multiply by 0.3048 to convert feet to meters.

hazardous waste per month. There are no open RCRA violations recorded for NAS Corpus Christi. Hazardous wastes are generated at NAS Corpus Christi as a result of operations conducted at the facility including metal plating, engine and airframe cleaning, fuel and ordnance storage, instrumentation maintenance and repair, and general aircraft maintenance. These hazardous wastes are disposed in accordance with applicable state and federal regulations.

NAS Corpus Christi produces less than 100 tons (90,718 kg) of regulated air emissions per year (U.S. Navy, 1999e) and is considered a minor source under the Clean Air Act Amendments. Reports filed in compliance with the U.S. EPA's Toxic Release Inventory program indicate that regulated air emissions from NAS Corpus Christi totaled 24 tons (21,754 kg) in 1996. These regulated air emissions include freon and methyl ethyl ketone. NAS Corpus Christi operates in compliance with applicable regulations and permits.

Ordnance is stored on NAS Corpus Christi's Dimmit Island and several other locations (U.S. Navy, 1997b; U.S. Navy, 1999e). There are electromagnetic antennae located at NAS Corpus Christi that can affect explosives. Safety issues regarding the storage of munitions at NAS Corpus Christi are discussed in *Section 3.3.8*.

Above-ground electrical power lines with pole-mounted transformers are located on NAS Corpus Christi, including in the housing areas (U.S. Navy, 1999e). The one transformer that contained polychlorinated biphenyls (CT65) was removed from NAS Corpus Christi in May 2000 (U.S. Navy, 2000k). During the EBS, all transformers appeared to be in good condition and free of leaks. NAS Corpus Christi has registered Buildings 361 and 1820 with the U.S. EPA as areas where polychlorinated biphenyls (PCBs) are transported, stored, or generated.

Lead-Based Paint (LBP) surveys were conducted at NAS Corpus Christi housing units in 1994 and 1999. LBP was detected in SOQs, MOQs, and some FY 66 housing units (U.S. Navy, 1999e). In 1994, lead was detected in the soils surrounding some of the SOQ housing units at concentrations below the Toxic Substances Control Act (TSCA) Section 403 action level for residential soil (2,000 parts per million at that time). In 1999, lead was detected in exterior siding and interior painted surfaces in the MOQ housing area. Lead was also detected at two soil sample sites (along the driveway and near the foundation) at concentrations above the HUD/U.S. EPA action level (400 parts per million) but below TSCA Section 403 action levels for lead in soil. A LBP Hazard Advisory was provided to residents. In 2001, the action level for lead in soil was changed to 400-1200 ppm on a yard-wide average (40 CFR 745). As stated in the ground lease, the 400-1200 ppm action level will require the PPV partner to determine if, and what type, abatement may be necessary. The planned corrective action includes demolition of the MOQ housing units and removal of the associated LBP materials in the buildings and soil. The PPV partner will be responsible for providing LBP disclosure information to all housing sublessees.

An Asbestos Survey was conducted at NAS Corpus Christi in 1994. Many of the SOQ, MOQ, and FY 66 housing units have asbestos-containing material (ACM) (U.S. Navy, 1999e). The existing survey identified areas with non-friable ACM, which represent a low potential hazard to residents, although there may be friable ACM present in areas that were not inspected. An Asbestos Management Plan was created to minimize and manage the hazards posed by ACM. This plan establishes guidelines for conducting operation and maintenance on ACM and describes the hazard communication program.

Fuel Farm 217 contains eight underground storage tanks (USTs) that have been abandoned-in-place. Five plugged and abandoned wells are located near Fuel farm 217 and were once owned by the Humble Oil and Refining Company. Fuel Farm 217 and the five oil and gas wells are located south of Laguna Shores (U.S. Navy, 1999e). These wells and the fuel farm are closed, but were not investigated for the EBS.

The Installation Restoration Program identifies, investigates, and remediates contaminated sites on DOD property consistent with regulatory requirements. Three Installation Restoration sites, nine leaking petroleum storage tank (LPST) sites, and numerous underground and aboveground storage tanks are located on NAS Corpus Christi (U.S. Navy, 1999e).

Prior to 1989, the pesticide chlordane was applied to NAS Corpus Christi housing foundations to treat for termites. Chlordane will attenuate naturally, but it does so very slowly and may remain in the soil for over 20 years. Chlordane is insoluble and bonds to the soil, and may pose a risk to human health through repeated exposure by ingestion of the soil. Volatilization, erosion, and microbial degradation all contribute to the decomposition and dispersion of chlordane. The chlordane, applied in an approved manner for regulated pesticides, is not considered a hazardous substance or waste in its current status.

Alternative Site C - Ingleside

Based on the number, type, and size of trees present on the site, it is not likely that the site has been developed in the past 20 years; however, a Phase I ESA has not yet been performed for Alternative Site C, so the historical use of the site could not be confirmed. Buried utility lines are located around the perimeter of the property. No signs of hazardous or petroleum materials storage or disposal were noted at the site (TC&B, 2000a). Household-type debris (i.e., glass, aluminum cans, and plastic bottles) was observed along the site's eastern border with Avenue A; however, no unusual odors or soil stains were noted.

An environmental regulatory database search was performed in 2000. Seven businesses with USTs, one business with a LPST case that has been granted closure by the TNRCC, and two businesses that are permitted to handle hazardous waste are located within two miles (3.22 km) of Alternative Site C (Environmental Data Resources, Inc., 2000b).

Alternative Site E - Aransas Pass

A portion of Alternative Site E was evaluated in a Phase I ESA conducted in 2000 (U.S. Navy, 2000v). The Phase I ESA included a site inspection of the property and a review of historical data and regulatory agency records. No environmentally significant concerns and/or recognized environmental conditions were identified on the property. The Phase I ESA identified former oil/gas well activities on the site, and Phase II ESA was performed at the property in October 2000 (Wareing & Associates, 2000). Based on the results of oil/gas well records review and soil sampling, no significant environmental impact was identified and no further action was recommended.

A Phase I ESA was conducted for the 55-acre Alternative Site E in November 2001. A search of environmental regulatory databases did not indicate any past or current violations at the site or adjacent properties. A permit violation involving effluent discharge at a property approximately 2,800 feet (1.03 km) north of the project site was filed and concluded in 1996 on the Civil Enforcement Docket of the U.S. Department of Justice. No further information was available concerning assessment. Immediately to the northeast of the property is the McMullen Lane

right-of-way and the Aransas Pass High School campus. Within 0.50 mile (0.80 km) of Alternative Site E, properties to the east, south and west are primarily a mixture of single-family residential and vacant land. To the north is a mixture of residential and vacant tracts, with some limited commercial retail development along SH 35 just beyond a 0.50-mile (0.80-km) radius (U.S. Navy, 2000v).

The site is an undeveloped tract of land and has been so since prior to the early 1950s. Some limited oil/gas well activity appears to have occurred up to and during the early 1950s, but no evidence of any production activity was noted. No signs of hazardous or petroleum materials storage or disposal were evident, and there was no indication of stained or discolored soils at the site. There was no evidence noted of petroleum aboveground or underground storage tanks, and no transformers are located on the property. Minor debris in the form of pieces of a garage door opener, several pieces of corrugated tin, and some miscellaneous trash from littering along McMullen Lane was noted on the property (U.S. Navy, 2000v).

3.1.7 Services and Utilities

Electrical Service

NAS Corpus Christi

Central Power and Light (CP&L) Company supplies electrical power to NAS Corpus Christi at the average residential rate of \$0.07987 per kilowatt hour (kwh) (Greater Corpus Christi Business Alliance, 1999). The company supplies single-phase 60 hertz service to residential users (San Patricio County Economic Development Corporation, 1999). CP&L Company has excess capacity to supply power to NAS Corpus Christi.

The electrical distribution system within the NAS Corpus Christi housing area is government owned, with a master meter (U.S. Navy, 1999a). *Figure 3-3* presents the alignment of electrical lines located in the project area. Laguna Shores housing has new wiring and is able to accept individual meters, but the remaining housing areas have not been renovated since the original construction and do not have individual meters. NAS Corpus Christi consumes approximately 10 million kilowatt hours annually on average. The rate charged is approximately \$0.056 per kwh.

Alternative Site C - Ingleside

CP&L Company supplies electrical power to the City of Ingleside. The electric company supplies 138 kilovolts through two transmission lines (City of Ingleside, 2000a). The average residential rate is \$0.07987 per kwh (Greater Corpus Christi Business Alliance, 1999). Overhead power lines were noted along Tiner Lane, Oakvale Road, and SH 361, immediately adjacent to Alternative Site C (TC&B, 2000a) (*Figure 3-4*).

Alternative Site E - Aransas Pass

CP&L Company supplies electrical power to the City of Aransas Pass. Electric service furnished would be single-phase, 60 hertz, and the average rate is \$0.0527 kilowatt hours (kwh) (San Patricio County Economic Development Corp., 1999). Power transmission lines near Alternative Site E are routed northwest-southeast along McMullen Lane, parallel to the northeast property boundary (*Figure 3-5*) (TC&B, 2000b).

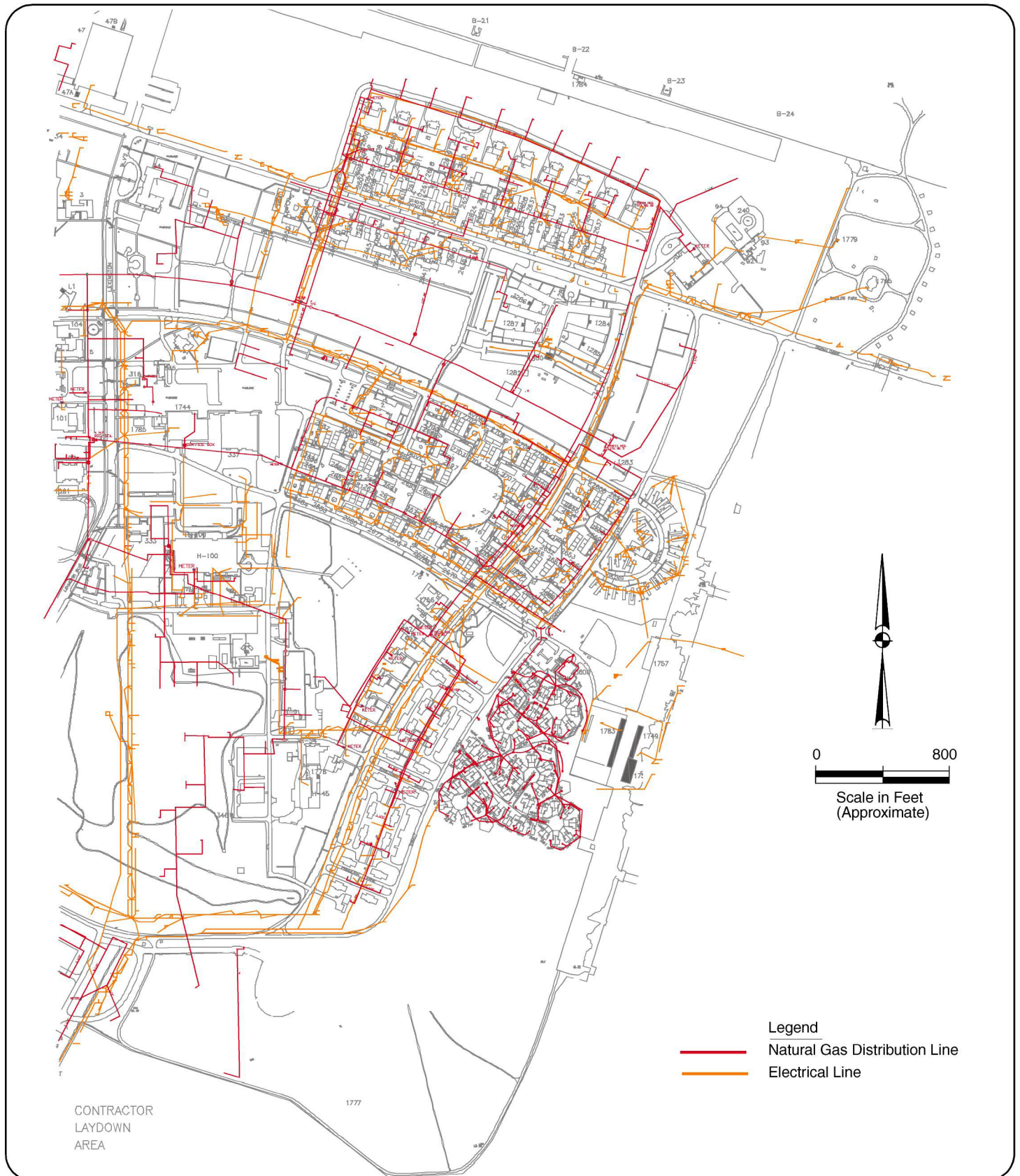


Figure 3-3. Electrical Power and Natural Gas Lines - NAS Corpus Christi (U.S. Navy 2000j)

Note: Multiply by 0.3048 to convert feet to meters.

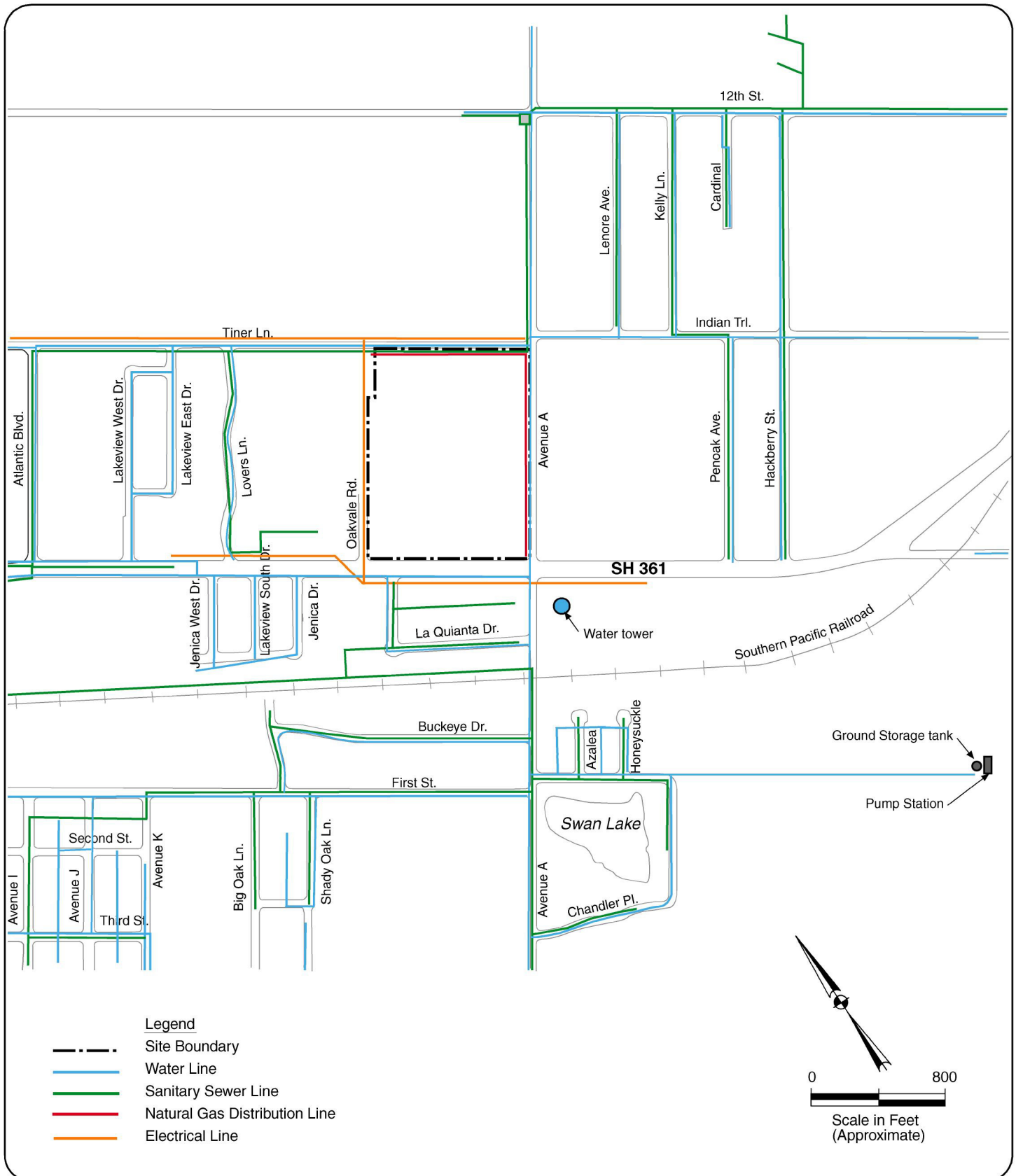


Figure 3-4. Existing Utilities - Alternative Site C, Ingleside
(City of Ingleside and Naismith Engineering, Inc., 1998a and 1998b)

Note: Multiply by 0.3048 to convert feet to meters.

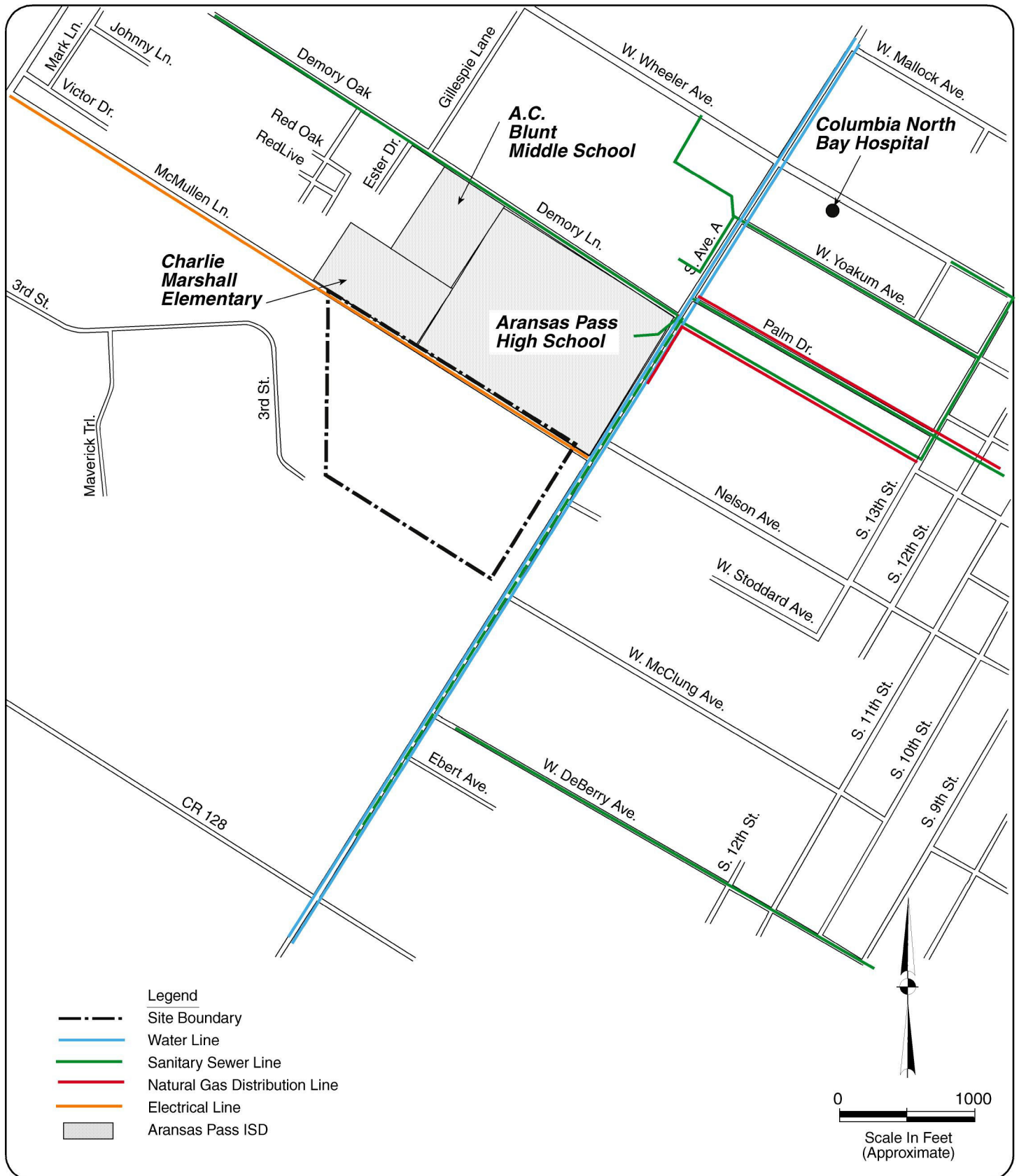


Figure 3-5. Existing Utilities - Alternative Site E, Aransas Pass
(City of Aransas Pass, 2000b; TC&B, 2000b)

Note: Multiply by 0.3048 to convert feet to meters.

Natural Gas Service

NAS Corpus Christi

The City of Corpus Christi supplies natural gas to NAS Corpus Christi (Greater Corpus Christi Business Alliance, 1999). The natural gas distribution system within the NAS Corpus Christi housing area is government owned, with a master meter (U.S. Navy, 1999a). *Figure 3-3* presents the alignment of gas lines located in the project area. Laguna Shores housing has new gas lines and is able to accept individual meters, but the remaining housing areas have not been renovated since the original construction and contain no individual meters. NAS Corpus Christi is a high volume natural gas consumer using, on average, approximately 12 million cubic feet (335 thousand cubic m) of natural gas annually. High volume uses are offered lower rates; NAS Corpus Christi is charged a rate of \$0.0036 per cubic foot (0.28 cubic m) of natural gas.

Alternative Sites C and E – Ingleside and Aransas Pass

Reliant Energy Entex supplies natural gas service to the Cities of Ingleside and Aransas Pass. The company supplies an average of 10 to 25 British Thermal Units (BTUs) of natural gas per cubic foot (0.28 cubic m) through a 4-inch (10.2-cm) line (City of Ingleside, 2000a). The average rate is \$0.004115 per cubic foot (0.28 cubic m) for 600 cubic feet (16.99 cubic m) of natural gas or less (San Patricio County Economic Development Corporation, 1999). *Figures 3-4* and *3-5* illustrate the alignment of utilities located in the project areas.

Two-inch (5.08-cm) gas lines are located along Avenue A and Tiner Lane at Alternative Site C. Reliant Energy Entex has the capacity to serve 155 new units in the City of Ingleside (TC&B, 2000b). There are two natural gas lines present less than 0.25 mile (0.40 km) northeast of Alternative Site E. A 4-inch (10.2-cm) line is located along Demory Lane, and the second line is routed along Palm Drive (TC&B, 2000b).

Potable Water Service

NAS Corpus Christi

NAS Corpus Christi purchases water from the City of Corpus Christi. Potable water for the area is primarily obtained from the Choke Canyon/Lake Corpus Christi Reservoir System, which is fed by the Nueces and Frio Rivers, but water is also obtained from Lake Texana, water wells, and the Garwood Irrigation Company on the Colorado River. The City of Corpus Christi obtains water from the O.N. Stevens Water Treatment Plant, a plant with a capacity of 144 million gallons per day (545 million liters per day) (CP&L Company Economic Development Department, 1999).

The potable water distribution system within the NAS Corpus Christi housing area is government owned, with a master meter (U.S. Navy, 1999a). *Figure 3-6* presents the alignment of water lines located in the project area. Laguna Shores housing has new water lines and is able to accept individual meters, but the remaining housing areas have not been renovated since the original construction and contain no individual meters. NAS Corpus Christi consumes approximately 88 million gallons (333 million liters) on average, annually. Corpus Christi potable water basic rate is \$0.00453 per gallon (3.79 liters) for the first 1,000 gallons (3,785 liters).

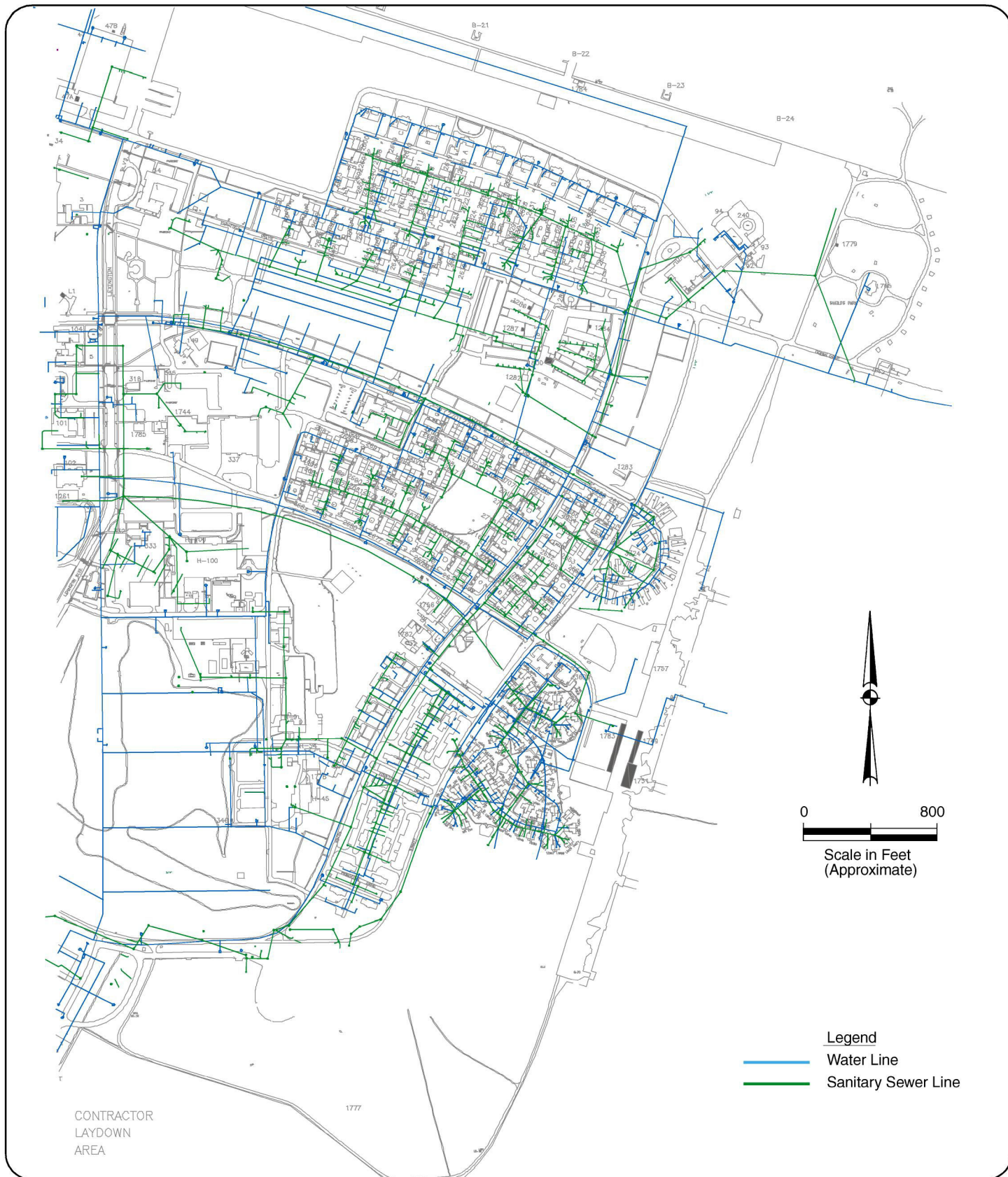


Figure 3-6. Water and Sanitary Sewer Lines - NAS Corpus Christi (U.S. Navy 2000j)

Note: Multiply by 0.3048 to convert feet to meters.

Alternative Site C - Ingleside

The San Patricio Municipal Water District supplies water to the Ingleside Water Supply Corporation, which, in turn, supplies potable water to the City of Ingleside and to NAVSTA Ingleside. The water plant has a capacity of 1.72 million gallons (6.51 million liters) per day (Central and South West Economic Development Department, 1999b). Peak use is 1.1 million gallons (4.16 million liters) per day. The supply capacity is adequate for existing and planned facilities through 2020 (Greater Corpus Christi Business Alliance, 1999).

Six-inch (15.2-cm) water lines are located along Tiner Lane and Avenue A (City of Ingleside and Naismith Engineering Inc., 1998a). *Figure 3-4* illustrates the alignment of water lines in the project area. The basic rate in the city for water supply services is \$0.015 per gallon (3.79 liters) (Central and South West Economic Development Department, 1999b).

Alternative Site E - Aransas Pass

Lake Corpus Christi is the source of potable water supplied by the San Patricio Municipal Water District to the City of Aransas Pass. The average daily water consumption rate is 1.654 million gallons (6.26 million liters) with a peak daily use of 3.065 million gallons (11.60 million liters) (City of Aransas Pass, Water/Wastewater Dept., 2000a).

Two water transmission lines are located adjacent to the Aransas Pass site. A 24-inch (61-cm) county water transmission line is located southeast of the site along the south side of Avenue A. A 12-inch (30.5-cm) city line is also routed along the north side of Avenue A (TC&B, 2000b). *Figure 3-5* presents the alignment of water lines located in the project area.

Wastewater Service

NAS Corpus Christi

NAS Corpus Christi operates a municipal wastewater treatment plant rated at 2.5 million gallons (9.46 million liters) per day. This plant is permitted for an average daily flow of 1.5 million gallons (5.67 million liters) per day and a daily maximum flow of 3.75 million gallons (14 million liters) per day (TNRCC, 2000b). NAS Corpus Christi operates an industrial wastewater treatment plant that is permitted for an average daily flow of 500,000 thousand gallons (1.89 million liters) per day and a daily maximum flow of 1 million gallons (3.79 million liters) per day.

The sanitary sewer distribution system within the NAS Corpus Christi housing area is government owned (U.S. Navy, 1999a). *Figure 3-6* presents the alignment of sanitary sewer lines located in the project area. All of the housing areas are serviced by a sewer system that has not been renovated since the original construction, with the lines in the Laguna Shores area dating to the 1950s (U.S. Navy, 2000k). NAS Corpus Christi produces, on average, approximately 60 million gallons (230 million liters), annually. The rate for wastewater services was \$0.0102 per gallon (3.79 liters).

Alternative Site C - Ingleside

The City of Ingleside owns two wastewater treatment plants to service the City of Ingleside, although only one is operating (TC&B, 2000a). The operational wastewater treatment plant has a capacity of 1.72 million gallons (6.51 million liters), and is running at approximately 65 percent of capacity

(Central and South West Economic Development Department, 1999b; TC&B, 2000a). The capacity of the wastewater treatment plant is adequate for existing and planned facilities (TC&B, 2000a).

A 10-inch (25.4-cm) sanitary sewer line is located along Tiner Lane and an 8-inch (20.3-cm) sanitary sewer line is installed in an easement of Avenue A north of the site (City of Ingleside and Naismith Engineering Inc., 1998b). *Figure 3-4* presents the alignment of sanitary sewer lines located in the project area. The basic rate in the city for wastewater services is \$0.013 per gallon (Central and South West Economic Development Department, 1999b).

Alternative Site E - Aransas Pass

The wastewater treatment plant for Aransas Pass has a capacity of 2.1 million gallons (7.95 million liters) per day and is operating at approximately 33 percent of capacity. The current average daily use for this plant is 0.699 million gallons (2.65 million liters), with a peak daily use of 1.597 million gallons (6.04 million liters) (City of Aransas Pass, 2000a).

An 8-inch (20.3-cm) sanitary sewer line is routed along DeBerry Avenue, one block south of the site. One 6-inch (15.24-cm) line located northeast of the site extends southeastward from Avenue A along Palm Drive. The second 6-inch (15.24-cm) line to the north is routed northwest to southeast along Demory Lane, extending across Avenue A and along Whispering Palms. One 12-inch (30.5 cm) line extends from Avenue A along Yoakum Avenue (TC&B, 2000b). *Figure 3-5* presents the alignment of sanitary sewer lines located in the project area.

Solid Waste Service

NAS Corpus Christi

Municipal solid waste generated in Nueces County is typically disposed of at the Elliot Landfill, a 500-acre (202-ha) facility located in Corpus Christi. The landfill is estimated to be closed in approximately 2003. A plan to build a 2,500-acre (1,012-ha) landfill with a service life of 100 to 150 years is underway (Elliot Landfill, 1999). The average rate for multi-family housing is \$11.51 per unit (Great Corpus Christi Business Alliance, 1999).

Alternative Sites C and E – Ingleside and Aransas Pass

Browning Ferris Industries renewed its contract with the City of Ingleside to provide municipal solid waste service until 2004 (Browning Ferris Industries, 2000). Browning Ferris also provides municipal waste services for the City of Aransas Pass (Aransas Pass Chamber of Commerce, 2000b). This solid waste is usually taken to the Sinton Landfill in Sinton, Texas, but is sometimes taken to Elliot Landfill in Corpus Christi. The Sinton Landfill has sufficient capacity for future development, and some landfill cells are projected to close in 2002; however, the company has plans to expand this landfill. The average rate for municipal solid waste collection service with recycling service is \$15.97 per unit per month.

Telephone Service

NAS Corpus Christi

Southwestern Bell Telephone Company provides telephone service to NAS Corpus Christi residents (Central and South West Economic Development Department, 1999b). Existing telephone cable lines serve the NAS Corpus Christi housing areas.

Alternative Sites C and E – Ingleside and Aransas Pass

GTE Southwest Inc. provides telephone service to the residents of Ingleside (Central and South West Economic Development Department, 1999a and 1999b) and Aransas Pass (Aransas Pass Chamber of Commerce, 2000b). Telephone cable lines are present along roadway easements adjacent to each of the proposed alternative housing sites.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Vegetation

The PPV partnership housing areas are located within the Gulf Prairies and Marshes Vegetation Area of Texas (Gould, 1975) and within the Tamaulipan Biotic Province of Texas (Blair, 1950; Taylor, Rutledge, and Herrera, 1997). Historically, the plant communities found in the Texas coastal bend consisted of coastal prairie, low thornscrub, and high mesquite habitat (Jones, 1982). Coastal prairie consists of native grasses and few trees or shrubs. Low thornscrub consists of thicket forming or mixed-brush species such as blackbrush (*Acacia rigidula*), tanglewood (*Forestiera angustifolia*), and guajillo (*Acacia berlandieri*). High mesquite habitat consists of small trees and high shrubs in assemblages less dense than thornscrub. Dominant plant species include mesquite (*Prosopis glandulosa*) and pricklypear cactus (*Opuntia lindheimeri*). Post oak savannah borders the subject area on the north. These areas are usually associated with deep sands and support a combination of grassland and members of the live oak complex (Simpson, 1988). Areas of high marsh dominate the lower elevations near Corpus Christi Bay, Oso Bay, Laguna Madre, and Redfish Bay. High marsh vegetation consists of halophytic species including glassworts, saltwort, seashore dropseed, sea ox-eye daisy, and salt-flat grass. Vegetation communities in the Ingleside area include a mix of coastal prairie, high marsh, and post oak savannah.

NAS Corpus Christi

Most of the vegetation at NAS Corpus Christi is maintained by regular mowing and most native prairie species have been replaced by introduced species such as Bermuda grass (*Cynodon dactylon*) and expanses of non-native grassland consisting of silky bluestem (*Dichanthium sericeum*) and king ranch bluestem (*Bothriochloa ischaemum*). The vegetation at NAS Corpus Christi also includes a variety of ornamental shrubs and trees. Native tree species observed during a site investigation include mesquite (*Prosopis glandulosa*) and huisache (*Acacia minuta*). Salt cedar (*Tamarix gallica*) was observed in areas adjacent to the Laguna Madre and was being used as an ornamental shrub. Small assemblages of live oak (*Quercus virginiana*) and redbay (*Persea borbonia*) still exist on some of the site. The shallow waters of the Corpus Christi Bay and northern reaches of the Laguna Madre support submerged beds of seagrasses including shoalgrass (*Halodule wrightii*) (Corpus Christi Bay National Estuary Program [CCBNEP], 1997).

Alternative Site C - Ingleside

A woodland, live oak community is dominant on the deep sandy soils within Alternative Site C. Live oak (*Quercus virginiana*), agarito (*Mahonia trifoliata*), and greenbriar (*Smilax rotundifolia*) were the dominant vegetative species observed during a site visit in March of 2000. Tasajillo (*Opuntia leptocaulis*), coral bean (*Erythrina herbacea*), and passionflower (*Passiflora* sp.) form minor components of this assemblage. The U.S. Fish and Wildlife Service (USFWS) characterized this site as live oak/redbay woodlands, with approximately the southern half of the site undisturbed (USFWS, 2000). The understory of the northern half of the site was cleared in the past, but appears to have had 10 years of natural regrowth (USFWS, 2000). The mostly evergreen live oak/redbay woodland is globally rare and restricted to the Coastal Bend of Texas (TNC, 1998).

Alternative Site E - Aransas Pass

Vegetation on the site is primarily dense woodlands with grass and shrub underbrush. Live oak (*Quercus virginiana*), yaupon (*Ilex vomitoria*), and greenbriar (*Smilax rotundifolia*) were the dominant vegetative species observed during a site visit in December 2000. A pond on the northeast corner of the site supported hydrophytic species including black willow (*Salix nigra*), bulrush (*Scirpus* sp.), largeleaf pennywort (*Hydrocotyle bonariensis*), and narrow-leaf cattail (*Typha angustifolia*). The USFWS has described the site vegetation as live oak/redbay woodlands, and the Texas Parks and Wildlife Department (TPWD) agreed with that description after a September 2001 site visit. As discussed above, this woodland habitat occurs only in the Coastal Bend of Texas, and is important to avian species, including neotropical migratory birds (TPWD, 2001a). Cleared areas of the site include an unimproved road that extends along the southwest and southeast property boundaries, two cleared pathways through the center of the site, and a one to two acre partially cleared area in the western portion of the site.

3.2.2 Wildlife

Fish and Shellfish

NAS Corpus Christi

The areas adjacent to the sites contain estuarine, intertidal flats and emergent marsh, whose productivity and conservation values are well-documented (Moulton, Dahl and Dall, 1997). These areas contains valuable habitat for juvenile, commercially important finfish such as sand trout (*Cynoscion arenarius*), southern flounder (*Paralichthys lethostigma*), and bay anchovy (*Anchoa mitchilli*). Important shellfish (shrimp, crabs, oysters, and relatives) such as white shrimp (*Penaeus setiferus*) and brown shrimp (*Penaeus aztecus*) also use seagrass beds and shallow estuarine waters. Blue crab (*Callinectes sapidus*) and American oyster (*Crassostrea virginica*) are other common shellfish resources found in shallow coastal waters of the Coastal Bend (Case and Wimer, 1977).

Alternative Site C - Ingleside

Alternative Site C is approximately 2.0 miles (3.2 km) from Corpus Christi Bay and contains no habitat for fish or shellfish.

Alternative Site E - Aransas Pass

Alternative Site E contains a freshwater pond that potentially supports a fish community of unknown quantity and diversity. This site is approximately 2.0 miles (3.2 km) from Redfish Bay and contains limited habitat for shellfish.

Reptiles and Amphibians

NAS Corpus Christi

The habitat at NAS Corpus Christi is limited for aquatic reptiles and amphibians. Terrestrial reptiles, such as the western diamondback rattlesnake (*Crotalus atrox*), gulf coast ribbon snake (*Thamnophis proximus orarius*), and the red-eared turtle (*Chrysemys scripta elegans*) inhabit bayshore and barrier island flats of central and south Texas (Britton and Morton, 1989). The green tree frog (*Hyla cinerea*), green anole (*Anolis carolinensis*), Mediterranean gecko (*Hemidactylus turcicus*), and Texas rat snake (*Elaphe obsoleta lindheimeri*) are known to exist at NAVSTA Ingleside and may exist at NAS Corpus Christi (U.S. Navy, 1995a).

Sea turtles including the green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), and leatherback sea turtle (*Dermochelys coriacea*) are known to use the waters of Corpus Christi Bay and upper Laguna Madre. However, none of these species are known to nest within the Corpus Christi Bay area. Strandings are infrequent on the inshore areas of Corpus Christi Bay as the barrier islands (San Jose and Mustang) have the vast majority of known sea turtle strandings (U.S. Navy, 1995a). No known strandings have occurred on the sandy shoreline of the NAS Corpus Christi or NAVSTA Ingleside (Raymond, 1989).

Alternative Site C - Ingleside

Alternative Site C would be expected to support populations of terrestrial reptiles and amphibians such as the terrestrial species previously mentioned that are known to occur at NAVSTA Ingleside.

Alternative Site E - Aransas Pass

Alternative Site E is likely to support populations of terrestrial reptiles and amphibians common on the coastal prairie, including the terrestrial species noted above. The presence of a permanent water body on the northeast corner of the site makes the presence of a more diverse reptile and amphibian community likely. One Texas rat snake was captured during a trapping survey on the site in 1997 (U.S. Navy, 1997a).

Birds

NAS Corpus Christi

The live oak-sweetbay assemblages found in the areas adjacent to NAS Corpus Christi are used by neotropical migrant birds. Osprey (*Pandion haliaetus*), Common Nighthawk (*Chordeiles minor*), and White-eyed Vireo (*Vireo griseus*) are among the migratory birds observed in the Breeding Bird Survey conducted at NAS Corpus Christi in March of 1998. Observations recorded 214 individuals of 27 species of birds. Many of the passerines, shorebirds, gulls, terns, and raptors do or may

potentially make use of NAS Corpus Christi. Shorebirds, including Great Blue Heron (*Ardea herodias*), Willet (*Catoptrophorus semipalmatus*), Roseate Spoonbill (*Ajaia ajaja*), and Black-bellied Plover (*Pluvialis squatarola*), use the beach and adjacent salt marsh areas for feeding (U.S. Navy, 1998b).

Alternative Site C - Ingleside

Alternative Site C is dominated by a mature stand of live oak (*Quercus virginiana*) trees that provides excellent nesting, roosting, and loafing cover for avian species. A variety of bird species would be expected to reside in the woodland forest on the site, and the area would support migratory birds during spring and fall migrations.

Alternative Site E - Aransas Pass

Alternative Site E is dominated by live oak (*Quercus virginiana*) trees and yaupon (*Ilex vomitoria*) shrubs that provide excellent nesting, roosting, and loafing cover for avian species. A variety of bird species would be expected to reside in the woodland forest area of the site. The area would also support migratory birds during spring and fall migration. The vegetation along the perimeter of the wetlands provides nesting, roosting, and foraging habitat for resident and migratory birds.

Mammals

NAS Corpus Christi

Mammals found in the vicinity of NAS Corpus Christi include small grassland-inhabiting rodents, opossums, raccoons, eastern cottontails, and those living in association with human habitations, such as the roof rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*). Upland areas may have native species of rodents, such as the hispid cotton rat (*Sigmodon hispidus*) and field mice (*Peromyscus* spp.) (Davis and Schmidly, 1994). Coyotes (*Canis latrans*), South Texas pocket gophers (*Geomys personatus*), and white-tailed deer (*Odocoileus virginianus*) have been observed at NAS Corpus Christi (U.S. Navy, 1995a).

Alternative Site C - Ingleside

Mammals likely to make use of Alternative Site C include those that tolerate living near developed areas and human habitation, such as rodents, skunk, opossum, raccoons, and eastern cottontails. Larger mammals are potential transients, though resident populations are unlikely given the proximity of this site to developed areas. Mammals that were observed during a camera survey in the area in 1995 included raccoon and gray fox (U.S. Navy, 1997a).

Alternative Site E - Aransas Pass

Mammals likely to make use of Alternative Site E include some of the species described for Alternative Site C. More reclusive species that do not tolerate living in the presence of human habitation are also potential residents because the site contains and is adjacent to undeveloped land. Larger mammals including coyotes, white-tailed deer, and feral pig (*Sus scrofa*) are potential residents. Populations of these species are likely present in adjacent undeveloped areas. Mammals that were captured during a trapping survey on the site in 1995 included one raccoon and one gray fox (U.S. Navy, 1997a).

3.2.3 Threatened and Endangered Species

Table 3-1 presents the latest listing of threatened or endangered species in Nueces and San Patricio Counties. The existence of potential habitat for these species at each PPV housing site is discussed below.

NAS Corpus Christi

Historically, Nueces County and San Patricio Counties have supported the kind of dense, thornscrub habitats optimal for several federally protected species. Two endangered species of big cats, the ocelot (*Leopardus [=Felis] pardalis*) and jaguarundi (*Herpailurus [=Felis] yagouaroundi cacomitli*), have been recorded in Nueces County. Ocelots are wide-ranging in nature with home ranges averaging 5.9 square miles (15.0 square km) (Harwell and Siminski, 1990). They inhabit dense thornscrub with canopy cover in excess of 90 percent, and the minimum size patch of this habitat needed to support a single animal is thought to be about 99 acres (40 ha), or adjacent patches of 74 acres (30 ha) or more. The patch size and canopy cover of the thornscrub preferred by both the ocelot and jaguarundi is not found anywhere within NAS Corpus Christi. A regional habitat assessment and live trapping/camera survey conducted in 1995 at NAVSTA Ingleside and adjacent areas concluded the existence of resident populations of ocelots or jaguarundis in the study area was highly unlikely (U.S. Navy, 1997a). Areas adjacent to NAVSTA Ingleside do contain areas of potential habitat but were isolated and lacked suitable vegetated corridors for ingress and egress. Lack of contiguous suitable habitat and surrounding urbanization preclude the possibility of finding ocelot or jaguarundi in or near NAS Corpus Christi.

Recently delisted (64 *Federal Register* 46542-58; August 25, 1999), American peregrine falcons have been observed at NAS Corpus Christi and NAVSTA Ingleside (U.S. Navy, 1995a). The shoreline areas provide opportunities for peregrines to prey on migrating or wintering shorebirds. The piping plover (*Charadrius melodus*) and the brown pelican (*Pelecanus occidentalis*) have been observed in Nueces and San Patricio Counties. High marsh, tidal flats and shorelines provide the type of feeding and nesting habitat sought by both species. These birds would be expected to use these habitats at undeveloped areas in the vicinity of marsh lands, tidal flats, or along shorelines.

The hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*) are federally listed as endangered. The loggerhead sea turtle (*Caretta caretta*) and green sea turtle (*Chelonia mydas*) are federally listed as threatened. None of these species are known to have nesting sites in the urbanized Corpus Christi Bay area. The NAS Corpus Christi site contains no critical habitat for these species, and the use of the sandy shoreline habitat is unlikely due to the urbanization of surrounding area.

Two plant species listed as endangered by the USFWS in Nueces County are the slender rushpea (*Hoffmannseggia tenella*) and South Texas ragweed (*Ambrosia cheiranthifolia*). These species are known to occur at a site in western Nueces County that exhibits Victoria series soils. Slender rushpea (*Hoffmannseggia tenella*) and South Texas ragweed (*Ambrosia cheiranthifolia*) do not occur on the fine, sandy soils found at NAS Corpus Christi.

**TABLE 3-1 FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES FOR
NUECES AND SAN PATRICIO COUNTIES**

Common Name	Scientific Name	Status
Mammals		
Ocelot	<i>Leopardus (=Felis) pardalis</i>	Endangered
Gulf Coast jaguarundi	<i>Hepailurus (=Felis) yagouaroundi cacomitli</i>	Endangered
Gulf Coast hog-nosed skunk	<i>Conepatus leuconotus texensis</i>	Candidate
West Indian manatee	<i>Trichechus manatus</i>	Endangered
Birds		
Piping Plover	<i>Chadrius melodus</i>	Threatened
Mountain Plover	<i>Chadrius montanus</i>	Candidate
Brown Pelican	<i>Pelecanus occidentalis</i>	Endangered
Reptiles		
Loggerhead sea turtle	<i>Caretta caretta</i>	Threatened
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Plants		
South Texas ambrosia	<i>Ambrosia cheiranthifolia</i>	Endangered
Slender rushpea	<i>Hoffmannseggia tenella</i>	Endangered

Source: U.S. Fish and Wildlife Service, 2001

Alternative Site C - Ingleside

No threatened or endangered plants or animals are known to occur within Alternative Site C. Lack of suitable habitat and surrounding urbanization make the possible occurrence of ocelot or jaguarundi at this site extremely unlikely. A regional habitat assessment and live trapping/camera survey conducted in 1995 within a 10-mile radius of NAVSTA Ingleside concluded the existence of resident populations of ocelots or jaguarundis in the study area was highly unlikely (U.S. Navy, 1997a). Slender rushpea and South Texas ragweed would not be expected on the sandy soils found within this site.

Alternative Site E - Aransas Pass

No known threatened or endangered plants or animals are present within Alternative Site E. Lack of contiguous suitable habitat and adjacent development make the possible occurrence of ocelot or jaguarundi at this site extremely unlikely. A regional habitat assessment and live trapping/camera survey conducted in 1995 within a 10-mile radius of NAVSTA Ingleside concluded the existence of resident populations of ocelots or jaguarundis in the study area was highly unlikely (U.S. Navy, 1997a). The trapping survey included a location on this site. Slender rushpea and South Texas ragweed would not be expected on the poorly drained sandy soils found within this site.

3.2.4 Wetlands

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) administers the permitting program authorizing the discharge of dredged or fill material into waters of the United States, including wetlands, pursuant to Section 404. In addition, Executive Order 11990, Protection of Wetlands, directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands on federal property.

NAS Corpus Christi

One area of remnant coastal emergent wetlands dominated by a variety of halophytes and one area of inland wetland dominated by a monoculture of switchgrass (*Panicum virgatum*) have been identified within NAS Corpus Christi. However, these wetlands are not in proximity to the proposed PPV housing areas and no potential jurisdictional wetlands exist within the NAS Corpus Christi Family Housing area (U.S. Navy, 1997b).

Alternative Site C - Ingleside

No wetlands exist within the undeveloped Alternative Site C, based on a review of the NWI map for the subject property (USFWS, 1979c). An on-site investigation revealed no areas that would appear to meet the USACE definition for jurisdictional waters of the United States.

Alternative Site E - Aransas Pass

A small pond adjacent to Avenue A was observed during the on-site investigation. This pond supported hydrophytic plant species and appeared to be a water of the United States. This pond also appears on the Aransas Pass, Texas NWI map (USFWS, 1979a). Several depressions in the sandy

soils were observed that appeared to hold water at least seasonally. These depressions did not support a predominance of hydrophytic vegetation; however, sediment deposits on leaf litter and senescent plants within these depressions support the conclusion that these areas are at least seasonally inundated. The USACE determined that the wetlands at Alternative Site E are non-jurisdictional (*Appendix A*).

3.3 SOCIOECONOMIC ENVIRONMENT

3.3.1 Community Setting and Land Use

NAS Corpus Christi is located in Corpus Christi, Nueces County, Texas. NAVSTA Ingleside is located in Ingleside, San Patricio County, Texas, approximately 13 miles (21 km) northeast of NAS Corpus Christi, on the northern bank of Corpus Christi Bay (*Figure 1-1*). The Nueces River forms the border between Nueces and San Patricio Counties, which comprise the two-county Corpus Christi Metropolitan Statistical Area (MSA).

NAS Corpus Christi

NAS Corpus Christi is bordered by Oso Bay to the west, Corpus Christi Bay to the north, and Laguna Madre to the east (*Figure 1-1*). Land use south of NAS Corpus Christi primarily consists of agricultural, industrial, residential, and urban areas. On-station land use in the area of the proposed project consists of a recreational area.

The housing areas that are included in the proposed action are not located within any clear zones or Accident Potential Zones (APZs). Of all of the existing family housing at NAS Corpus Christi (*Figure 2-1*), only SOQ 11 is located in a clear zone (U.S. Navy, 1985, 1997b, and 1999a); however, SOQ 11 is not included in the proposed PPV program (U.S. Navy, 2000y and 2000r). Residential land use within a clear zone is not compatible with AICUZ program guidelines (U.S. Navy, 1988). The AICUZ program and APZs are discussed in further detail in *Section 3.3.8*.

Alternative Site C - Ingleside

Alternative Site C is located in Ingleside, San Patricio County, Texas, and is bound by SH 361 to the south, Avenue A to the east, Tiner Lane to the north, and Oakvale to the west (*Figure 2-7*). The site is undeveloped. Adjacent land use includes single-family residential and pastureland to the north; single-family residential and undeveloped wooded land to the east; single-family residential, hotel/motel accommodations, and a gas station to the south; and undeveloped land and one single-family residence to the west (TC&B, 2000a).

The northern and northeastern portions (approximately two-thirds of the site, or 18.0 acres [7.3 ha]) of Alternative Site C are zoned as Multi-family Residential, while the southern and southwestern portions (or 9.0 acres [3.6 ha]) are zoned as General Commercial (City of Ingleside, 1999) (*Figure 3-7*). Permitted uses under Multi-family Residential includes any use permitted within a three- and four-family residential district; multi-family dwellings; boarding houses, lodging houses, and day care facilities; hospitals, clinics, and sanitariums, except criminal, mental, or animal hospitals; and nursing and convalescent homes. Permitted uses under General Commercial zoning include professional office district, local commercial district, retail, hotels/motels and lodging, car washes, mobile home sales, automobile sales, and farm implement display and sales. Permitted uses

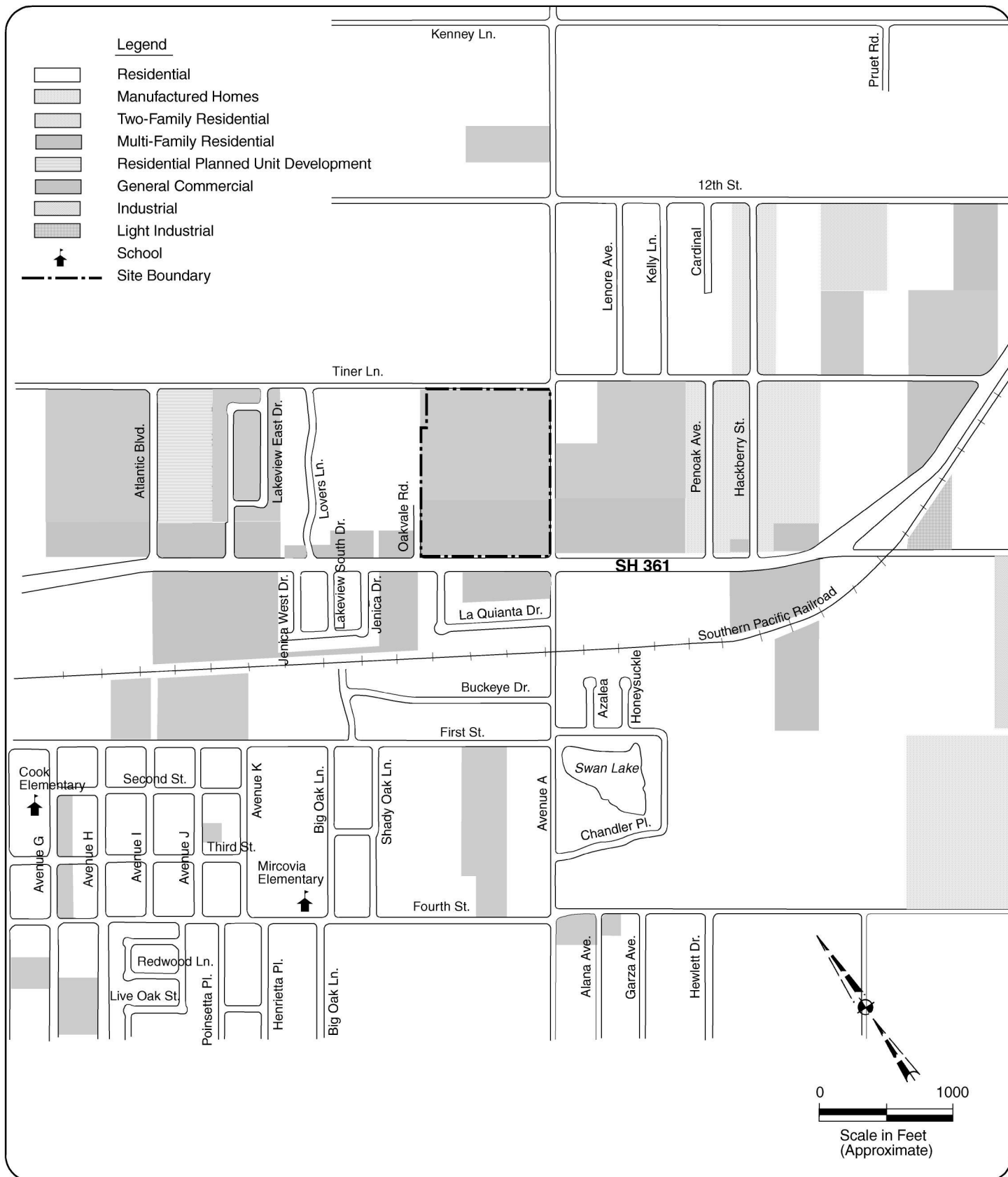


Figure 3-7. Zoning - Alternative Site C, Ingleside
(City of Ingleside, 1999)

Note: Multiply by 0.3048 to convert feet to meters.

under General Commercial zoning do not include single- or multi-family housing developments (City of Ingleside, 1997).

The City of Ingleside's *Comprehensive Master Plan*, adopted in 1994, is consistent with the city's zoning ordinance and districts regarding multi-family housing development, and does not specify any multi-family to single-family residential development ratios. The City of Ingleside is in the process of updating the Comprehensive Master Plan (City of Ingleside, 2000b and 2001).

Alternative Site E - Aransas Pass

Alternative Site E is located in San Patricio County, Texas, just outside the incorporated city limits of Aransas Pass. The site is bounded by McMullen Lane to the northeast and Avenue A to the southeast (*Figure 2-8*). Alternative Site E is undeveloped and is thickly vegetated with trees and shrubs. There are two areas of ponded water near the eastern edge of the site near Avenue A. Clearings (presumably cut for surveying purposes) run northeast-southwest through the center and near the perimeter of the site. Adjacent land use includes educational facilities (i.e., Charlie Marshall Elementary, A.C. Blunt Middle, and Aransas Pass High Schools) to the northeast and undeveloped land to the southeast, southwest, and northwest.

Alternative Site E is not located within the incorporated city limits of the City of Aransas Pass and is not zoned (City of Aransas Pass, 2000 and 1996; TC&B, 2000b). Zoning immediately surrounding Alternative Site E includes Agricultural and Single-Family Residential (City of Aransas Pass, 1996).

3.3.2 Aesthetics

The Corpus Christi Bay area is characterized by flat coastal expanses and miles of sandy beaches bordering the Gulf of Mexico. Gentle gulf breezes, tropical vegetation and flowers, and a diversity of wildlife are found throughout the area. The semi-tropical climate, sandy beaches, and popular recreational attractions make Corpus Christi the second most frequented visitor destination in Texas (Greater Corpus Christi Business Alliance [GCCBA], 1997).

NAS Corpus Christi

On-station land use in the area of the proposed housing units consists recreational areas and residential land use. The existing 72 MOQs are not occupied and, due to their poor condition, have been inactivated for use as family housing (U.S. Navy, 2000a). There are some mature trees in the area of the existing MOQs and SOQs. Fifteen of the housing units included in the proposed action possess sufficient significance and integrity to meet National Register of Historic Places (NRHP) criteria. These 15 units include SOQs 2 through 10, located in the King Drive Historic District; SOQ 12, located in the Lexington Boulevard Historic District; and SOQs HA through HE, located in the Ninth Street Historic District (U.S. Navy, 1994b, 1994c, and 1999a), as discussed in *Section 3.3.11*.

Alternative Site C - Ingleside

Alternative Site C is undeveloped and wooded with a sparse understory. Surrounding land use consists of single-family residential, pastureland, undeveloped wooded land, hotel/motel accommodations, and commercial. Adjacent development includes some ornamental landscaping.

In general, the site and the immediate surrounding area portray a rural visual aspect, with some surrounding commercial development.

Alternative Site E - Aransas Pass

Alternative Site E is undeveloped and is thickly vegetated with trees and shrubs. There are two small ponds on the eastern part of the site near Avenue A that contribute to the aesthetic qualities of the site. Clearings have been cut northeast-southwest through the center and near the perimeter of the site. Adjacent land use includes educational facilities and undeveloped land. In general, the site and the surrounding area visually depict a rural setting.

3.3.3 Population and Demographics

The 2000 population of Nueces County is estimated to be 332,581 and is projected to increase to 374,552 by the year 2010 (Texas Water Development Board [TWDB], 1999). The average household size in Nueces County is 2.88 persons (Missouri State Census Data Center [MSCDC], 1999). The 2000 population of Corpus Christi is estimated to be 296,339 and is projected to increase to 335,580 by the year 2010 (TWDB, 2000). According to the 1990 U.S. Census, the racial/ethnic distribution for persons living in the City of Corpus Christi is approximately 44 percent white, 50 percent Hispanic, 5 percent black, and 1 percent other (U.S. Bureau of the Census, 1990). The average household size is 2.84 persons. Of the persons 25 years of age or older, approximately 29 percent do not hold a high school diploma (or equivalency) and 24 percent hold an Associate's degree or higher. The median age of persons living within the City of Corpus Christi is 31 years. The racial/ethnic distribution for persons living within Nueces County is similar to that within the City of Corpus Christi—approximately 43 percent white, 52 percent Hispanic, 4 percent black, and 1 percent other (MSCDC, 1999) (*Table 3-2*).

The 2000 population of San Patricio County is estimated to be 73,384 and is projected to increase to 85,802 by the year 2010 (TWDB, 1999). The racial/ethnic distribution for persons living within San Patricio County is approximately 48 percent white, 50 percent Hispanic, 1 percent black, and 1 percent other (*Table 3-2*). The average household size in San Patricio County is 3.10 persons (MSCDC, 1999). The 2000 population of Aransas Pass and Ingleside is estimated to be 9,458 and 8,022, respectively, and is projected to increase to 10,977 and 9,589, respectively, by the 2010 (TWDB, 2000). According to the 1990 U.S. Census, the racial/ethnic distribution for persons living in the City of Ingleside is approximately 69 percent white, 30 percent Hispanic, and 1 percent other. The racial/ethnic distribution for persons living in the City of Aransas Pass is approximately 61 percent white, 34 percent Hispanic, and 5 percent other (U.S. Bureau of the Census, 1990). The average household size in Aransas Pass and Ingleside is 2.79 persons and 3.04 persons, respectively. Of the persons 25 years of age or older in Aransas Pass and Ingleside, approximately 47 percent and 40 percent, respectively, do not hold a high school diploma (or equivalency); and 13 percent and 16 percent, respectively, hold an Associate's degree or higher. The median age of persons living within Aransas Pass and Ingleside is 33 years and 30 years, respectively (MSCDC, 1999).

There are a total of 176 families (176 military members and 364 dependents) on the family housing waiting list (U.S. Navy, 2000n, 2000o, 2000t, and 2000u). Of these 176 families, approximately 63 percent live in Corpus Christi, 8 percent live in Portland, 1 percent live in Aransas Pass, 16 percent live in Ingleside, and 12 percent live in other areas outside of the incorporated city limits of Corpus Christi, Portland, Aransas Pass, and Ingleside. It should be noted that some of the families

TABLE 3-2 POPULATION AND DEMOGRAPHICS

Geographic Area ⁽¹⁾	1990 Population ⁽²⁾	Race/Ethnicity ⁽²⁾						Total Minority	% Living Below Poverty ⁽³⁾ (1989)
		White	Black	American Indian/ Eskimo/ Aleut	Asian/ Pacific Islander	Other	Hispanic Origin		
Nueces County									
Total	291,145	124,643	12,206	773	2,058	465	151,000	57.2%	20.8%
% of Total	100.0%	42.8%	4.2%	0.3%	0.7%	0.2%	51.9%	57.2%	20.8%
San Patricio County									
Total	58,749	28,005	745	142	138	133	29,586	52.3%	25.3%
% of Total	100.0%	47.7%	1.3%	0.2%	0.2%	0.2%	50.4%	52.3%	25.3%
City of Corpus Christi									
Total	257,453	113,663	11,904	710	2,002	431	128,743	55.9%	20.0%
% of Total	100.0%	44.1%	4.6%	0.3%	0.8%	0.2%	50.0%	55.9%	20.0%
City of Aransas Pass									
Total	7,080	4,301	288	6	29	12	2,444	39.3%	34.6%
% of Total	100.0%	60.7%	4.1%	0.1%	0.4%	0.2%	34.5%	39.3%	34.6%
City of Ingleside									
Total	5,696	3,956	8	24	9	0	1,699	30.5%	15.8%
% of Total	100.0%	69.5%	0.1%	0.4%	0.2%	0.0%	29.8%	30.5%	15.8%
1990 Census Block Groups*									
29.00:1	1,827	1,232	230	30	59	0	276	32.6%	6.1%
30.00:1	2,239	1,576	58	19	36	7	543	29.6%	10.5%
30.00:2	1,535	944	80	0	38	0	473	38.5%	36.6%
30.00:3	940	877	0	0	8	0	55	6.7%	28.4%
106.03:1	661	598	0	0	0	0	63	9.5%	0.0%
106.03:2	384	327	0	0	4	0	53	14.8%	2.9%
102.00:2	1,646	1,033	32	0	0	0	581	37.2%	33.0%
102.00:6	1,070	648	0	20	0	0	402	39.4%	22.3%
103.00:1	1,788	1,542	29	24	0	0	193	13.8%	12.4%
103.00:2	266	229	0	0	0	0	37	13.9%	9.4%
103.00:4	985	561	8	0	0	0	416	43.0%	24.1%

*NAS Corpus Christi is located in Block Group 29.00:1, and adjacent to Block Groups 30.00:1, 30.00:2, and 30.00:3.

*Site B is located in Block Group 102.00:6, and adjacent to Block Group 102.00:2.

*Site C is located in Block Group 103.00:1, and adjacent to Block Groups 103.00:2 and 103.00:4.

*Census Block Group demographic data is compared to county-wide demographic data for the purposes of environmental justice analysis, as discussed in *Sections 3.3.5* and *4.3.5*.

Source: ⁽¹⁾Wessex, Inc., 1994

⁽²⁾U.S. Bureau of the Census, 1990

⁽³⁾MSCDC, 1999

included in the 13 percent living outside of Corpus Christi, Portland, and Ingleside incorporated city limits do live in nearby areas within the Corpus Christi area, such as Taft and Rockport (U.S. Navy, 2000n, 2000o, 2000t, and 2000u). It is assumed that the demographic profile (e.g., age, percentage of school-age children, etc.) for any military family that would be a candidate for the proposed 20 additional family housing units would exhibit characteristics similar to the families on the waiting list. These 20 families include approximately 62 persons, based on planning ratios derived from the waiting list.

3.3.4 Economic Activity

The primary economic activities within the Corpus Christi area include agriculture, military, trade, manufacturing, health care, and oil and gas. The petrochemical industry contributes more than \$1.0 billion into the area economy and provides an estimated 50,000 direct and indirect jobs (GCCBA, 1999). Tourism, which contributes over \$500 million annually to the economic base, along with the expansion of small businesses, offers opportunities for the creation of jobs and additional income to the region (GCCBA, 1999).

Military installations have been major employers in the project area for many years. NAS Corpus Christi, which contributes approximately \$340 million annually to the area economy through military and civilian payroll (GCCBA, 1999), is the area's largest military installation and a major flight training facility for the Navy (U.S. Navy, 1995a). Tenants at NAS Corpus Christi include Chief of Naval Air Training; Training Air Wing 4; Training Squadrons 27, 28, and 31; Commander Mine Warfare Command; U.S. Coast Guard/Air Station; Corpus Christi Army Depot (CCAD); U.S. Customs; Marine Aviation Training Support Group; Marine Corps Reserve Training Center; and the Naval Hospital (U.S. Navy, 1999b). The CCAD, located on 190 acres (77 ha) at NAS Corpus Christi, is the largest industrial employer in South Texas. In FY 1999, the CCAD generated an annual payroll of \$145.4 million, and spent \$28.2 million in supplies, utilities, and construction projects (GCCBA, 1999).

NAVSTA Ingleside, which employs 3,400 military personnel and 420 civilians (U.S. Navy, 2000a), is a vital component of the Navy's process to consolidate the operations and training of its mine countermeasures forces in South Texas, and serves as homeport to 25 mine countermeasures ships (U.S. Navy, 2000c). Tenant commands at NAVSTA Ingleside include, but are not limited to, Commander, Regional Support Group Ingleside; Commander, Mine Countermeasures Squadrons One, Two, and Three; Mine Warfare Training Center; Fleet Industrial Supply Center; Shore Intermediate Maintenance Activity/Naval Reserve Maintenance Facility; and Program Executive Office Mine Warfare Fleet Engineering Office (U.S. Navy, 1999c).

Employment

The civilian work force within Nueces and San Patricio Counties is 147,095 and 30,232, respectively, with respective unemployment rates of 5.8 percent and 6.0 percent, as of October 2000 (Texas Workforce Commission, 2000). Major industrial employers (i.e., those with more than 2,000 employees) in the Corpus Christi area include Corpus Christi Independent School District (ISD), Christus Spohn Health, NAVSTA Ingleside, NAS Corpus Christi, City of Corpus Christi, CCAD, Columbia Healthcare, HEB Grocery Company, and Bay Inc. (Central Power & Light Economic Development Department, 1999).

Approximately 6,619 persons are employed at NAS Corpus Christi, including 2,471 military personnel and 4,148 civilians. There are approximately 3,820 persons employed at NAVSTA Ingleside, including 3,400 military personnel and 420 civilians (U.S. Navy, 2000a).

Income

The 1995 median annual household income for persons living within the Corpus Christi MSA was an estimated \$32,925 (GCCBA, undated). The average annual income for persons living within Nueces and San Patricio Counties was \$25,219 and \$25,025, respectively, in 1998 (Coastal Bend Workforce Development Board, 1999). Approximately 20 percent and 21 percent of the population of the City of Corpus Christi and Nueces County, respectively, live below the national poverty level. Approximately 35 percent, 16 percent, and 25 percent of the population of Aransas Pass, Ingleside, and San Patricio County, respectively, live below the national poverty level (MSCDC, 1999) (*Table 3-2*).

3.3.5 Environmental Justice

Executive Order 12898

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs on minority and low-income populations. A minority population is defined as a group of people and/or a community experiencing common conditions of exposure or impact that consists of persons classified by the U.S. Bureau of the Census as Negro/Black/African-American; Hispanic; Asian or Pacific Islander; American Indian, Eskimo, or Aleut; or other non-white persons. A low-income population is defined as a group of people and/or a community that, as a whole, live below the national poverty level. The average poverty level threshold for a family of four people in 1989 was a total annual household income of \$12,674 (U.S. Department of Commerce, Bureau of the Census, 2000), while it is \$17,650 in 2001 (66 *Federal Register* 10695-10697, February 16, 2001). Disproportionate environmental impact occurs when the risk or rate for a minority population or low-income population from exposure to an environmental hazard exceeds the risk or rate of the general population and, where available, to another appropriate comparison group (DOD, 1995; U.S. EPA, 1998a). The potential effects of the proposed action have been evaluated in accordance with the requirements of the Executive Order.

NAS Corpus Christi is located within 1990 Census Block Group 29.00:1, and adjacent to Block Groups 30.00:1, 30.00:2, and 30.00:3. Alternative Site C is located within Block Group 103.00:1 and adjacent to Block Groups 103.00:4 and 103.00:2. Alternative Site E is located within Block Group 102.00:6 and adjacent to Block Groups 102.00:2. The racial/ethnic distribution and poverty level status of the population within these Block Groups are shown in *Table 3-2*.

Executive Order 13045

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates that federal agencies identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of federal policies, programs, activities, and standards (62 *Federal Register* 19883-19888, April 23, 1997).

There are no public schools located within a 0.50-mile (0.80-km) radius of NAS Corpus Christi. Alternative Site E is located southwest of and immediately adjacent to Aransas Pass High, A.C. Blunt Middle School, and Charlie Marshall Elementary School (*Figure 2-8*). Cook Elementary and Gilbert Mircovia Elementary Schools are located approximately 0.50 mile (0.80 km) southwest and south, respectively, of Alternative Site C (*Figure 2-7*).

3.3.6 Housing

There were 3,105 housing sales in the Corpus Christi area in 2000, with an average price of \$102,700 (Texas A&M University Real Estate Center, undated). The average monthly rental rate for a 3-bedroom house is \$803 (U.S. Navy, 2000c). There are approximately 130 apartment complexes, with an estimated 26,000 apartment units, in Corpus Christi (GCCBA, 1999). The average monthly rental rate for an apartment is \$452 for a 1-bedroom, \$570 for a 2-bedroom, and \$647 for a 3-bedroom. The vacancy rate for rental units in Corpus Christi area is 6 percent (U.S. Navy, 2000s).

Bridge Pointe Landing, an existing 302-unit PPV Navy family housing development, is located in Portland, Texas. Two of the 302 units are used as management housing. All of the units at Bridge Pointe Landing are occupied and there is a waiting list of 35 families (U.S. Navy, 2000a, 2000n, 2000t, and 2000u). Although not in the immediate project area, Hawks Landing, which consists of 102 units, is another existing PPV Navy housing development located near NAS Kingsville. Military members with dependents who are stationed at NAS Corpus Christi, NAVSTA Ingleside, and NAS Kingsville are eligible for housing at Bridge Pointe Landing and Hawks Landing (U.S. Navy, 2000c). A new 150-unit PPV housing development, Hunter's Cove, in Kingsville is scheduled to be completed in October 2001. Texas Terrace, which is owned by the Navy and contains 244 multi-family units, is also located in Kingsville. There are 95 units at Texas Terrace that are occupied by military families. Once Hunter's Cove is complete, the 95 families living at Texas Terrace will move to Hunter's Cove. Texas Terrace will then be conveyed to the PPV partner who is responsible for constructing Hunter's Cove, and will no longer be used as military family housing (U.S. Navy, 2001c).

A *Housing Market Analysis* for NAS Corpus Christi and NAVSTA Ingleside was completed in May 2000. The housing market area for NAS Corpus Christi and NAVSTA Ingleside includes locations that can be reached within a one-hour commute from either installation in a privately owned automobile. The housing market area includes portions of four counties—Nueces, San Patricio, Aransas, and Kleberg. There are 3,295 families for whom NAS Corpus Christi and NAVSTA Ingleside have housing responsibility. Of these 3,295 families, 872 own homes (U.S. Navy, 2000s) and 767 live either on-station at NAS Corpus Christi or off-station at Bridge Pointe Landing, which leaves 1,656 required units (assuming that the 72 existing MOQs, discussed below, remain unoccupied). The acceptable supply of units for military families in the housing market area is 2,215 units, and the military share of the rental market is 1,343 units. Therefore, there is a military family housing deficit of approximately 313 units (U.S. Navy, 2000a, 2000n, and 2000s). There are 176 military families on the housing waiting list (35 for Bridge Pointe Landing and 141 for on-station housing at NAS Corpus Christi). The families on the waiting list include 90, 83, and 3 military personnel stationed at NAS Corpus Christi, NAVSTA Ingleside, and NAS Kingsville, respectively (U.S. Navy, 2000n, 2000o, 2000t, and 2000u).

In 2005, a projected 3,044 families for whom NAS Corpus Christi and NAVSTA Ingleside have housing responsibility will require family housing. Of these 3,044 families, it is estimated that 980 would own homes and 767 would live either on-station at NAS Corpus Christi or off-station at Bridge Pointe Landing, which would leave 1,297 required units. The acceptable supply of units for

military families in the housing market area would be 2,107 units, and the military share of the 2005 rental market would be 1,118 units; therefore, there is a projected military family housing deficit of approximately 179 units in 2005, without the proposed project (U.S. Navy, 2000s).

NAS Corpus Christi

There are a total of 539 family housing units and 28 mobile home pads at NAS Corpus Christi (U.S. Navy, 1999a and 2000a); however, only 537 units are included in the proposed action, since SOQs 1 and 11 are not included in the proposed action (U.S. Navy, 2000y and 2000r). The 539 family-housing units are categorized into four major housing groups: SOQs, MOQs, FY 66 Housing, and Laguna Shores Housing (*Figure 2-1*). These family housing units are summarized below; a detailed description of these units is provided in *Section 3.1.1*.

There are 17 SOQs (U.S. Navy, 2000a). SOQ 1 (Officer Flag Quarters), located on King Drive, is a 6-bedroom, 2-story unit. SOQs 2 through 10, located on King Drive, are 4-bedroom, 1-story units. SOQ 11 (Officer Flag Quarters), located on Rabaul Street, is a 4-bedroom, 2-story unit. SOQ 12, located on Avenue D, is a 4-bedroom, 1-story unit. SOQs HB through HE (also known as Hospital SOQs) are 4-bedroom, 1-story units and SOQ HA is a 2-story, 4-bedroom unit (U.S. Navy, 1999e and 2000u). SOQs 1 through 10, located in the King Drive Historic District; SOQ 12, located in the Lexington Boulevard Historic District; and SOQs HA through HE, located in the Ninth Street Historic District, have been identified as historic structures (U.S. Navy, 1994b, 1994c, 1999a, and 2000u). SOQs 1 and 11 are not included in the proposed action (U.S. Navy, 2000y and 2000r). Historic housing units are discussed in more detail in *Section 3.3.11*.

There are 72 MOQs (U.S. Navy, 2000a). MOQs 14 through 31 are 3-bedroom fourplexes. In the rear of each fourplex, there is a detached garage with a storage room and an 8-car garage (U.S. Navy, 1999e). These 72 units are unoccupied and have been inactivated for use as family housing (U.S. Navy, 2000a and 2000u).

There are 350 FY 66 units (U.S. Navy, 2000a). Buildings 2600 through 2651 (Field Grade Officers' Quarters and Enlisted Persons Housing) are 1-story, rectangular plan, 2-family, 4-bedroom housing units. Buildings 2652 through 2717 (Enlisted Married Housing), located on Avenue D, are a combination of 1-story and 2-story multi-family units. There are 2-, 3-, and 4-bedroom units (U.S. Navy, 1999e and 2000u).

There are 100 Laguna Shores units (U.S. Navy, 2000a). The Laguna Shores (Enlisted Married Housing, Buildings 1 through 50) housing is a combination of duplex style 2-story townhouses, 2-bedroom units, and 1-story handicapped housing. These dwellings were constructed in 1997 and 1998 to replace the previous 1941-era Enlisted Married Housing quarters (U.S. Navy, 1999e and 2000u).

There is a mobile home housing area located on a small half-circle drive, Viking Drive, off Dimmit Drive. There are 28 available hookups and cement foundations for privately owned mobile homes (U.S. Navy, 1999e, 2000a, and 2000u).

Housing for single military personnel at NAS Corpus Christi includes 559 BEQ rooms and 377 BOQ rooms (U.S. Navy, 2000d).

NAVSTA Ingleside

There are 643 BEQ rooms at NAVSTA Ingleside, including 200 BEQ rooms completed in December 2000. There are no family housing units or BOQs at NAVSTA Ingleside (U.S. Navy, 2000d, 2000q, and 2001b).

Alternative Sites C and E – Ingleside and Aransas Pass

Alternative Sites C and E are undeveloped and there are no existing housing units at these sites.

3.3.7 Education and Child Care

Education

NAS Corpus Christi

Five ISDs are located within the City of Corpus Christi. These five include Corpus Christi, Flour Bluff, West Oso, Tuloso-Midway, and Calallen ISDs. School-age children whose families live on-station at NAS Corpus Christi attend schools within Flour Bluff ISD. There are six schools within Flour Bluff ISD that offer standard curriculum and instruction, including an early childhood center (kindergarten [K]) and a primary (grades 1 and 2), elementary (grades 3 and 4), intermediate (grades 5 and 6), junior high (grades 7 and 8), and high (grades 9 through 12) schools. The ISD also has an Alternative Center for Education and a Student Development and Guidance Center for students with special curricular and instructional needs. These schools are located approximately 2.5 miles (4 km) south of NAS Corpus Christi. Total 2000-2001 school year student enrollment was 4,807. Student enrollment and total capacity of these schools within the ISD are shown in *Table 3-3*. The State of Texas mandates that the student-teacher ratio for kindergarten through grade 4 is no more than 22:1. The average student-teacher ratio within Flour Bluff ISD in grades 5 through 12 is 15.5:1 (Flour Bluff ISD, 2000a, 2000b, and 2001).

Flour Bluff ISD will spend approximately \$5,971 per student during the 2000-2001 school year. There are 793 students attending schools within Flour Bluff ISD whose parent(s) is in the military. The ISD receives approximately \$1,010 per student from Federal Impact Aid per military student annually (Flour Bluff ISD, 2000a, 2000b, and 2001).

Alternative Site C - Ingleside

There are five schools within Ingleside ISD, with a 2000-2001 total student enrollment of 1,995, for kindergarten through grade 12. Children living in the proposed PPV housing at Alternative Site C would attend Cook Primary (kindergarten and grade 1), Gilbert Mircovich Elementary (grades 2 through 4), Blaschke/Sheldon Elementary (grades 5 and 6), Taylor Junior High (grades 7 and 8), or Ingleside High (grades 9 through 12) Schools. Student enrollment and total capacity of these five schools are shown in *Table 3-3*. The State of Texas mandates that the student-teacher ratio for kindergarten through grade 4 is no more than 22:1. The average student-teacher ratio within Ingleside ISD in grades 5 through 12 is 17:1 (Ingleside ISD, 2000d). Cook Elementary and Gilbert Mircovia Elementary Schools are located approximately 0.50 mile (0.80 km) southwest and south, respectively, of Alternative Site C (*Figure 2-7*).

TABLE 3-3 2000-2001 SCHOOL CAPACITY AND STUDENT ENROLLMENT FOR PROJECT-AREA ISDs

School (Grade)	Total Capacity	2000-2001 Enrollment	Total Teachers
Flour Bluff ISD			
Flour Bluff Early Childhood Center (K)	725	323	23
Flour Bluff Primary (1 – 2)	990	689	43
Flour Bluff Elementary (3 – 4)	1,210	712	45
Flour Bluff Intermediate (5 – 6)	1,500	738	36
Flour Bluff Jr. High (7 – 8)	1,425	822	60
Flour Bluff High (9 – 12)	2,125	1,523	103
Total	7,975	4,807	310
Aransas Pass ISD			
Faulk Early Childhood Center (K – 1)	440	320	19
W.A. Kieberger Elementary (2 – 3)	500	365	20
Charlie Marshall Middle School (4 – 5)	500	338	22
A.C. Blunt Middle School (6 – 8)	750	477	40
Aransas Pass High (9 – 12)	640	560	42
Total	2,830	2,060	143
Ingleside ISD			
Cook Primary (K – 1)	399	313	20
Gilbert Mircovia Elementary (2 – 4)	660	510	29
Blaschke/Sheldon Elementary (5 – 6)	392	327	17
Taylor Jr. High (7 – 8)	575	301	17
Ingleside High (9 – 12)	800	544	36
Total	2,826	1,995	118

NA – Not Applicable

Source: Flour Bluff ISD, 2001
Aransas Pass ISD, 2000
Ingleside ISD, 2000d

Ingleside ISD will spend approximately \$5,647 per student during the 2000-2001 school year. There are 596 students attending schools within Ingleside ISD whose parent(s) is in the military. The ISD receives approximately \$93.52 per student from Federal Impact Aid per military student annually (Ingleside ISD, 2000d).

Based on the average student population growth rate of 2.95 percent per year, Gilbert Mircovia Elementary, Blaschke/Sheldon Elementary, and Cook Primary schools will reach critical capacity (defined as 90 percent of the total capacity) in 2001, 2002, and 2003, respectively. Each of these schools is within 80 to 90 percent of the critical capacity as of September 2000 (Population and Survey Analysts, 2001). The Ingleside ISD has stated that there are no plans to construct any new schools or expand any existing schools (Ingleside ISD, 2000d).

Alternative Site E - Aransas Pass

There are five schools within Aransas Pass ISD, with a 2000-2001 total student enrollment of 2,060, for kindergarten through grade 12. Children living in the proposed PPV housing at Alternative Site E would attend Faulk Early Childhood Center (kindergarten and grade 1), Gilbert W.A. Kiegerber Elementary School (grades 2 and 3), Charlie Marshall Middle School (grades 4 and 5), A.C. Blunt Middle School (grades 6 through 8), or Aransas Pass High School (grades 9 through 12). Student enrollment and total capacity of these five schools are shown in *Table 3-3*. The State of Texas mandates that the student-teacher ratio for kindergarten through grade 4 is no more than 22:1. The average student-teacher ratio within Ingleside ISD in grades 5 through 12 is 13:1 (Aransas Pass ISD, 2000). Charlie Marshall Elementary, A.C. Blunt Middle, and Aransas Pass High Schools are located immediately adjacent to and the northeast of Alternative Site E (*Figure 2-8*).

Aransas Pass ISD will spend approximately \$5,606 per student during the 2000-2001 school year. There are 91 students attending schools within Aransas Pass ISD whose parent(s) is in the military. The ISD receives approximately \$11 per student from Federal Impact Aid per military student annually (Aransas Pass ISD, 2000).

In 1999, Aransas Pass ISD has passed a \$4.0 million bond issue to construct a new sixth grade wing; however, the ISD is waiting to receive a Facilities Allotment Grant from the State of Texas prior to beginning planning for and construction of the new wing. If the new wing were constructed in the future, the sixth grade campus would be moved from the A.C. Blunt Middle School campus to the Charlie Marshall Middle School campus (Aransas Pass ISD, 2001).

Child Care

There is a childcare center at NAS Corpus Christi that is available to military members and their dependents. The capacity of the on-station childcare center is 117 children, and total enrollment is 80 children. There is no waiting list for the childcare center. There is not a childcare center at NAVSTA Ingleside (U.S. Navy, 2000a). There are 7 and 13 private childcare providers located within 10 miles (16 km) of Aransas Pass and Ingleside, respectively, and approximately 100 private child care providers located throughout Corpus Christi.

3.3.8 Health and Safety

Accident Potential Zones

The primary objective of the AICUZ program is to bring about development in and around Navy air installations that is compatible with noise and safety hazards associated with aircraft operations. An AICUZ map combines Noise Zones and APZs to determine land use compatibility. Noise Zones are divided into three categories: 1) Noise Zone 1 - noise 75 dB or higher; 2) Noise Zone 2 - noise between 65 dB and 75 dB; and 3) Noise Zone 3 - noise lower than 65 dB. Noise contours for NAS Corpus Christi are shown on *Figure 3-1* and are discussed in *Section 3.1.4*. APZs and clear zones are briefly described as follows:

- Clear Zone - The area immediately beyond the usual runway threshold that possesses a higher potential for accidents than other areas further away from the runway.
- APZ-1 - The area beyond the clear zone that possesses a measurable potential for accidents relative to the clear zone.
- APZ-2 - The area beyond APZ-1 (or clear zone, if APZ-1 is not used) that has a measurable potential for aircraft accidents relative to APZ-1 or the clear zone (U.S. Navy, 1988).

The proposed project areas are not located within any clear zones or APZs. Of the existing family housing at NAS Corpus Christi (*Figure 2-1*), only SOQ 11 is located in a clear zone (U.S. Navy, 1985, 1997b, and 1999a); however, SOQ 11 is not included in the proposed action (U.S. Navy, 2000y and 2000r). Residential land use within a clear zone is not compatible with AICUZ program guidelines (U.S. Navy, 1988). There are no APZs at NAVSTA Ingleside or B or C, since no aircraft operations are conducted at or adjacent to these sites.

Electromagnetic Radiation Arcs

A theoretical electromagnetic radiation (EMR) study was conducted at NAS Corpus Christi in 1996 (U.S. Navy, 1997b). The theoretical limits for effects on ordnance were calculated for each transmitter or emitter using the “worst case” conditions, i.e., emitters operating at maximum power, most critical frequency, and lowest elevation (*Figure 3-8*). These arcs represent areas of possible electromagnetic radiation that could potentially detonate ordnance if present. Ordnance is received at the south gate and is transported by escort to Dimmit Island where it is stored. The Hazards of Electromagnetic Radiation to Ordnance (HERO) describe conditions caused by EMR that are theoretically unsafe during the presence of ordnance (U.S. Navy, 1997b).

- There are 100-watt high frequency (HF) antennas at Buildings 41, 10, and 18 that represent HERO conditions along the flight lines and in the vicinity of Hangar 41
- There are 100-watt HF transmitters at the Naval Hospital (Building H-100) and the 500-watt transmitters adjacent to Building 1721 that represent HERO conditions along Lexington Boulevard (U.S. Navy, 1997b)
- There are 10-watt, 15-watt, and a proposed 50-watt transmitter at Hangars 44, 45, and 47 that represent HERO conditions along the Ocean Drive ordnance transportation route
- There is a proposed transmitter at Hangar 41 that would represent HERO conditions for ordnance operations that would be conducted at Hangars 41 through 46 (U.S. Navy, 1997b)

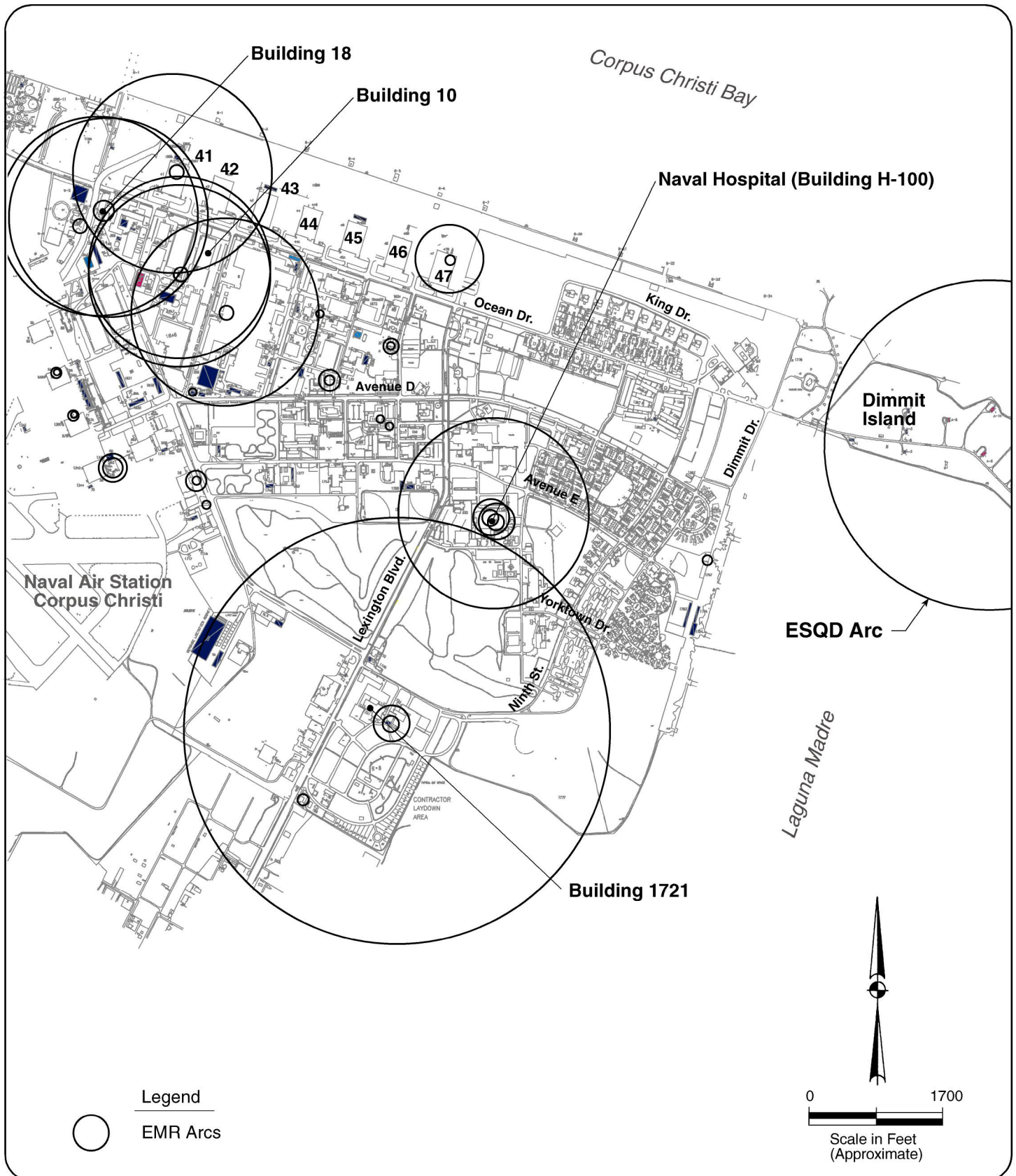


Figure 3-8. EMR Arcs Near the Family Housing Areas at NAS Corpus Christi (U.S. Navy, 1997b)

Note: Multiply by 0.3048 to convert feet to meters.

Since ordnance storage occurs at Dimmit Island, the area is surrounded by an Explosive Safety Quantity Distance (ESQD) arc and is designated as having a “severe constraint” to development. The EMR arcs caused by existing emitters and transmitters that may affect ordnance, when present, do not preclude development. Transmission controls are required for the EMR-generating systems during specific HERO unsafe or HERO susceptible ordnance operations (U.S. Navy, 1997b).

The existing Laguna Shores housing area is located near the EMR arc associated with the 500-watt transmitters adjacent to Building 1721. The existing MOQs and SOQs HA and HE are located near or within this EMR arc. The SOQs HA through HE and a portion of the FY 66 housing area are located near the EMR arc associated with the transmitter at the Naval Hospital. No ordnance is stored or transported to C or E; therefore, there are no ESQD arcs generated. In addition, no transmitters or emitters of EMR are present at any of the Alternative Site C or E.

Police and Security

NAS Corpus Christi

NAS Corpus Christi is located within City of Corpus Christi Police District B (City of Corpus Christi, 2000b). The security force at NAS Corpus Christi, which consists of approximately 8 patrol cars and 45 personnel (U.S. Navy, 2000f), provides police protection services to the existing housing areas.

Alternative Site C - Ingleside

The City of Ingleside Police Department provides police protection services to Alternative Site C. There are three patrol units on duty at any one time. Average police response time is less than two minutes (Ingleside Police Department, 2000).

Alternative Site E - Aransas Pass

The City of Aransas Pass Police Department provides police protection services to Alternative Site E. There are two to four patrol units on duty at any one time. Average police response time is approximately two to four minutes (Aransas Pass Police Department, 2001).

Fire Protection

NAS Corpus Christi

NAS Corpus Christi operates its own fire station. When fully manned, the NAS fire station is comprised of three engine companies, consisting of four people each; two crash trucks (i.e., fire engines) of seven people; five inspection personnel; and a training officer (U.S. Navy, 2000g). In addition, three Corpus Christi Fire Department stations could respond to a call at NAS Corpus Christi. The closest of these, Station 13, is located in Flour Bluff approximately 1.5 miles (2.4 km) south of the NAS on Waldron Road (U.S. Navy, 1998a; Corpus Christi Fire Department, 2000).

Alternative Site C - Ingleside

The Ingleside Volunteer Fire Department provides fire protection services to Alternative Site C. The Ingleside Volunteer Fire Department, which has 45 members, has a Mutual Aid Agreement with

NAVSTA Ingleside Fire Department and the Aransas Pass Fire Department to provide fire protection services within the City of Ingleside. The fire department operates out of one station, and the average response time is approximately 5 minutes. The fire department is in the process of planning the construction of a second fire station, which will be located at the southeast corner of SH 361 and Avenue A, across the street from Alternative Site C (Ingleside Volunteer Fire Department, 2000 and 2001).

Alternative Site E - Aransas Pass

Fire protection services to Alternative Site E are provided by the Aransas Pass Fire Department, which has 6 paid firefighters. Fifteen volunteer firefighters also support the fire department. The fire department operates out of one fire station and the average response time is approximately 2 minutes (Aransas Pass Fire Department, 2001).

Hospitals

Specialty clinic services at the Corpus Christi Naval Hospital, which is located at NAS Corpus Christi, that are available to NAS and NAVSTA military personnel and their dependents include dental; ear, nose, and throat-medicine; general medicine; gynecology; immunizations; internal medicine; mental health; optometry; orthopedic; pediatrics; and physical therapy. As of November 1, 1997, the Naval Hospital no longer provides inpatient care (e.g., surgery). NAS Corpus Christi has an external Resource Sharing Agreement with Spohn Health System for medical care (primarily inpatient care and outpatient surgeries) for active duty personnel (U.S. Navy, 1998a and 2000b).

There is a medical clinic located on-station at NAVSTA Ingleside. The medical clinic provides general medical services to military personnel and their dependents and immunizations for children. Physical therapy is provided twice per week. The medical clinic does not provide inpatient care (e.g., surgery). The clinic at NAVSTA Ingleside refers patients to private care providers in the community or to the medical clinic at NAS Corpus Christi in the case of necessary medical services that are not provided at the NAVSTA medical clinic (U.S. Navy, 2000h).

NAS Corpus Christi

The closest public hospital to NAS Corpus Christi is Columbia Bay Area Medical Center, which is located approximately 5 miles (8 km) west of the NAS. The nearest Spohn Health System facility, Spohn Hospital South, is located approximately 10 miles (16 km) west of the NAS.

Emergency medical service calls are handled through 911 (U.S. Navy, 1998a). There are emergency medical technicians on-station that provide first response to on-station medical emergencies; however, the City of Corpus Christi provides emergency medical services (EMS) when there is a serious medical emergency (e.g., heart attack) or when emergency transport off-station is required. The on-station emergency medical technicians do not provide off-station transport (U.S. Navy, 2000i). The closest City of Corpus Christi EMS unit to NAS Corpus Christi is located at Corpus Christi Fire Station 13. The average response time to the NAS by the City of Corpus Christi EMS is approximately 6 minutes (Corpus Christi Fire Department, 2000).

Alternative Site C - Ingleside

The closest hospital to Alternative Site C is Columbia North Bay Hospital, located in Aransas Pass, approximately 2 miles (3 km) north of Alternative Site C. The nearest Spohn Health System facility to Alternative Site C is Spohn Memorial Hospital, which is located in Corpus Christi, approximately 18 miles (29 km) southwest of Alternative Site C.

Emergency medical service to Alternative Site C is provided by Tri-County Emergency Medical Services Inc., which operates two ambulances out of one EMS station located in Ingleside. This station serves the Ingleside and Aransas area. Tri-County Emergency Medical Services typically operates at 65 percent of their service capacity area. Tri-County Emergency Medical Services Inc., also provides supplementary ambulance service to NAVSTA Ingleside in the case of serious medical conditions, such as a heart attack (Tri-County Emergency Medical Services Inc., 2000).

Alternative Site E - Aransas Pass

The closest hospital to Alternative Site E is Columbia North Bay Hospital, located in Aransas Pass, approximately 0.50 mile (0.80 km) northeast of Alternative Site E. The nearest Spohn Health System facility to Alternative Site E is Spohn Memorial Hospital, which is located in Corpus Christi, approximately 21 miles (34 km) southwest of Alternative Site E.

Emergency medical service to Alternative Site E is provided by Tri-County Emergency Medical Services Inc. (Aransas Pass Chamber of Commerce, 2000a), which operates two ambulances out of one EMS station located in Ingleside. This station serves the Ingleside and Aransas area. Tri-County Emergency Medical Services typically operates at 65 percent of their service capacity area (Tri-County Emergency Medical Services Inc., 2000).

3.3.9 Transportation

Ground Transportation

Highways and major thoroughfares in the project area consist of Interstate Highway (IH) 37, US 181, and SH 361, 35, 358, 357, 44, 286, and P 22. SH 358, which turns into Padre Island Drive, provides access to NAS Corpus Christi's southern gate via N.A.S. Drive (*Figure 1-1*). Ocean Drive provides access to the station's northern gate. Avenue A and Business 35 provide access to Alternative Site E, and SH 361 provides access to Alternative Site C. Current 24-hour average traffic volumes for N.A.S. Drive, US 181, Business 35, and SH 361 were obtained from Texas Department of Transportation (TxDOT)-Corpus Christi District Office. The most current traffic data available for these four roadways is for the year 1999 (TxDOT, 2000) and is discussed in more detail below.

Rail service is provided to Corpus Christi by Missouri Pacific and Southern Pacific railroads, and Texas Mexican Railway. Texas Mexican Railway provides direct rail service to NAS Corpus Christi. Rail Service to Ingleside is provided by Southern Pacific Railroad.

NAS Corpus Christi

N.A.S. Drive provides access to the southern gate at NAS Corpus Christi. N.A.S. Drive is a 4-lane undivided roadway. Average daily traffic (ADT) on N.A.S. Drive near the station's southern gate was 18,400 in 1999 (TxDOT, 2000). N.A.S. Drive has adequate capacity to accommodate existing

traffic volumes. Level of service (LOS) analyses indicate that N.A.S. Drive operates at LOS C. Levels of service range from LOS A, which represents free-flowing conditions and the best range of operating condition, to LOS F, which is the worst condition where traffic is congested. LOS B, C, D, and E represent intermediate conditions.

The Navy maintains the streets within NAS Corpus Christi. The asphalt pavement in Laguna Shores, which was installed in 1998, is in excellent condition. The street conditions in the remainder of the existing family housing areas are in good condition (U.S. Navy, 1999a).

Alternative Site C - Ingleside

Alternative Site C is located adjacent to SH 361 in Ingleside. SH 361 near Alternative Site C is a 4-lane, undivided roadway, and serves as the major east-west thoroughfare in the community of Ingleside. ADT on SH 361 near Alternative Site C was 9,900 in 1999 (TxDOT, 2000). SH 361 has adequate capacity to accommodate existing traffic volumes. LOS analyses indicate that SH 361 operates at LOS A, which indicates free-flowing traffic conditions.

Alternative Site E - Aransas Pass

Alternative Site E is located adjacent to Avenue A in Aransas Pass. TxDOT does not have ADT figures for Avenue A; however, ADT on Business 35 near Avenue A, a 5-lane roadway with a center left-turn lane, was 12,700 in 1999 (TxDOT, 2000). Business 35 has adequate capacity to accommodate existing traffic volumes. LOS analyses indicate that Business 35 operates at LOS B.

Air Transportation

Corpus Christi International Airport, located approximately 13 miles (21 km) west-northwest of NAS Corpus Christi, is serviced by four major national airlines (City of Corpus Christi, 2000b). Direct service is available to major Texas cities, which in turn provide connections to cities throughout the world. In addition, several domestic and international freight carriers provide service throughout the area (U.S. Navy, 1998a).

Between 4 and 300 air operations are conducted at NAS Corpus Christi on a daily basis (U.S. Navy, 2000p). Air operations at NAS Corpus Christi are conducted between the hours of 7:00 a.m. and midnight. Noise associated with these air operations is discussed in *Section 3.1.4*, and noise contours are shown on *Figure 3-1*. Accident potential zones are discussed in *Section 3.3.8*. Air operations are not conducted at NAVSTA Ingleside or at B or C.

3.3.10 Recreation

A number of natural attractions including the Padre Island National Seashore, Mustang Island State Park, Lake Corpus Christi State Park, the Aransas National Wildlife Refuge, and the historic King Ranch are located within the Corpus Christi Bay area. Man-made attractions completed in recent years include the Texas State Aquarium, the retired aircraft carrier U.S.S. Lexington Museum, the Greyhound Race Track, the Corpus Christi Museum of Science and History, the Art Museum of South Texas, Heritage Park, Corpus Christi Botanical Gardens, Mustang Island State Park, and the Texas Maritime Museum. Cultural activities include the Corpus Christi Ballet, various museums, theater groups, and the Corpus Christi Symphony (GCCBA, 1999). The Gulf of Mexico and area

bays provide many water-related activities such as fishing, waterfowl hunting, boating, sunbathing, swimming, birdwatching, and water sports.

Local recreational facilities in the City of Aransas Pass include five public parks, a private golf course, a bowling alley, tennis courts located at the public schools, public boat ramps, public and private fishing piers, camping areas, and recreational vehicle parks. The Aransas Pass Community Park includes a baseball and softball complex, a playground with covered picnic facilities, public restrooms, soccer fields, and the site of Aransas Pass' Annual Shrimporee (Aransas Pass Chamber of Commerce, 2000a and 2000b).

Local recreational and social facilities in the City of Ingleside include four public parks, an 18-hole disc golf course, one public boat launch, one public swimming pool, three tennis courts, a basketball court, a beach volleyball court, nature trails, and a bike trail. One of the parks, Live Oak Park, is designated as an official site on the Great Texas Coastal Birding Trail (Ingleside Chamber of Commerce, undated).

The Morale, Welfare, and Recreation (MWR) Department at NAS Corpus Christi provides a wide range of recreational activities for Navy personnel. The department operates a bowling center; a fitness center; a gymnasium with a basketball/volleyball court and racquetball courts; a free-weight room; outdoor football, soccer, and softball fields; outdoor tennis courts and a sand volleyball court; a running track; a golf course; an auto hobby shop; a recreation center with pool tables, dart boards, air hockey tables, ping pong tables, shuffleboard, horseshoe pit, five televisions, a movie room, and a piano room; a swimming pool; a fishing pier; boat storage facility; and a veterinary clinic, among other services (U.S. Navy, 1999c).

The MWR Department at NAVSTA Ingleside operates a fitness facility with exercise equipment, aerobics, a swimming pool, an indoor basketball court, five racquetball courts, two outdoor basketball courts, four tennis courts, a sand volleyball court, and a batting cage and softball field. The MWR is also responsible for an auto skill shop. Long Glass Marina is also available, offering fishing boats, pontoon boats, canoes, sailboats, windsurfing boards, and travel trailers for rent (U.S. Navy, 2000c).

3.3.11 Cultural Resources

The identification and protection of architecturally and historically significant resources is an important component of future planning NAS Corpus Christi and is required to meet compliance with the National Historic Preservation Act. A comprehensive approach to accomplish this was outlined in the NAS Corpus Christi *Cultural Resource Management Plan*, or CRMP, which was completed in 1994 and updated in 2000 (U.S. Navy, 1994b; 2001e) and approved by the State Historic Preservation Officer (SHPO). The CRMP provides guidelines and procedures for the identification and management of historic and archeological resources at NAS Corpus Christi. These guidelines and procedures enable NAS Corpus Christi to meet its legal responsibilities for the identification, evaluation, and treatment of its historic and archaeological properties, while allowing NAS mission goals to be obtained without undue delay. There is on-going consultation with the SHPO concerning new construction, or modifications, to existing buildings, structures, or areas that are considered historically significant and eligible for listing (U.S. Navy, 2001e).

NAS Corpus Christi

The *Cultural Resource Inventory Survey Report*, completed in 1994, provides a historical overview of the development of NAS Corpus Christi, and documents all remaining pre-1947 buildings, structures, and sites. A total of 237 properties at NAS Corpus Christi met the criteria of the survey and were inventoried in accordance with federal regulations. An architectural survey identified seven historic districts and one individual property (the Navy Brig, Building 252) at NAS Corpus Christi as possessing sufficient significance and integrity to meet NRHP criteria. These properties are significant under NRHP Criteria A and C for their role in military history and their architectural character (U.S. Navy, 1994c). Three of the seven historic districts at NAS Corpus Christi are associated with the housing units that are included within the proposed action. SOQs 2 through 10, located in the King Drive Historic District; SOQ 12, located in the Lexington Boulevard Historic District; and SOQs HA through HE, located in the Ninth Street Historic District, have been identified as possessing sufficient significance and integrity to meet National Register criteria. SOQ 1 is also located within the King Drive Historic District; however, SOQ 1 is not included in the proposed action (U.S. Navy, 1994b, 1994c, 1999a, and 2000r).

The King Drive Historic District is composed of 17 buildings and structures along King Drive, facing Corpus Christi Bay. Included in the district are SOQs 1 through 10 and seven properties associated with the Officers' Club. The buildings are significant for their role in the development of the station. SOQs 1 through 10, completed in 1941, were planned and built as part of the response to national defense concerns prior to and during World War II. Although not included as part of the proposed action, SOQ 1 is designated as the quarters for the Navy Region South Texas Commander (U.S. Navy, 2001e). SOQs 2 through 10 display characteristics of the Minimal Traditional style that was popular in suburban development of the 1930s and 1940s (U.S. Navy, 1994b and 1994c).

The Lexington Boulevard Historic District includes 17 buildings and structures that were built for a variety of station operations. Included in the district is SOQ 12 (the Ernest Powell House) and the original water tower, auditorium, gymnasium, and chapels. These properties are significant for their role in the development of the station and for their architectural design. SOQ 12 was constructed in 1936 by Ernest Powell and was designated as a dwelling by the Navy in 1940. Powell acquired the land in 1929 and also owned Facility Number 49, which was originally a nightclub. SOQ 12 is representative of the suburban expansion of Corpus Christi southward and, due to its substantial construction, was retained by the Navy during its construction of the NAS (U.S. Navy, 1994b and 1994c).

The Ninth Street Historic District includes SOQs HA through HE, which were constructed in 1942 to house senior officers of the Naval Hospital as part of the response to national defense concerns prior to and during World War II. The district is significant for its role in the development of the station. SOQs HA through HE display characteristics of the Colonial Revival style (U.S. Navy, 1994b and 1994c).

The *Phase I Archeological Investigations* report for the NAS Corpus Christi was completed in 1994. Two sites, 41NU274 and 41NU273, were discovered at or adjacent to NAS Corpus Christi during the Phase I surveys. One of the sites, Site 41NU274, has been recommended for Phase II testing, in the event that these two sites cannot be avoided by construction. In addition, a historic component, a windmill and possible farmstead structure, associated with site 41NU274 is potentially eligible for nomination to the NRHP. The other site, 41NU273, appears to have been disturbed; therefore, Phase II

testing is not recommended for this site. Neither of these two sites, nor the windmill, is located within the housing areas that are included in the proposed action (U.S. Navy, 1994c).

Alternative Sites C and E – Ingleside and Aransas Pass

Alternative Sites C and E are undeveloped. No sites that are listed in the NRHP or as State Archeological Landmarks exist at Alternative Site C or E, and no other archeological or historical sites have been reported at either of the two alternative sites (Texas Archeological Research Laboratory [TARL], 2000a and 2000b; Texas Historical Commission [THC], 2000; U.S. Navy, 2000v).

4.0 ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

This section provides an analysis of the anticipated environmental impacts that may result from the implementation of the proposed PPV housing partnership in the South Texas Region. The potential impacts of the proposed action on the local physical, biological, and socioeconomic environment are discussed. The potential impacts of the No Action Alternative are discussed in *Sections 4.1, 4.2, and 4.3* and are not described individually for each resource described in *Section 3.0*.

Although the proposed PPV partnership housing would include 155 new units of family housing in the Ingleside area and an increase of 45 occupied units of family housing at NAS Corpus Christi, two units at each location are proposed to be occupied or utilized by resident property managers. The impacts to services and utilities (*Section 4.1.7*) are addressed for the entire housing areas. Impacts to population, education, child care, and transportation are addressed only for the increase in military families because it is assumed that the property managers would potentially be local residents and therefore would have no impact, or insignificant impacts, to socioeconomic resources in the area.

4.1 PHYSICAL ENVIRONMENT

The No Action Alternative consists of not implementing a PPV partnership in the South Texas Region. Implementation of the No Action Alternative would result in no new construction of family housing units and no privatization or renovation of existing housing units at NAS Corpus Christi. The Navy would continue to own and maintain the existing housing units and associated land, facilities, and utilities. Maintenance and repair activities for existing housing units and infrastructure would likely be scheduled based on funding availability. Implementation of the No Action Alternative would fail to address the shortage of affordable, adequate housing for military families in the South Texas Region. Military families on the waiting list for PPV housing would continue to reside in private rental housing with rents and utility payments that are not easily affordable. There would be no impact to existing topography, geology or soils at NAS Corpus Christi or the Alternative Sites C and E. There would be no impact to the local or regional air quality or noise environment as a result of the implementation of the No Action Alternative. There would be no impact to the generation, management, or disposal of hazardous materials or hazardous waste as a result of the implementation of the No Action Alternative.

4.1.1 Facilities

NAS Corpus Christi

The PPV partner would own, operate, manage, and maintain the existing inventory of Navy-owned housing at NAS Corpus Christi, and any additional constructed housing, including site infrastructure, for a term of 50 years (U.S. Navy, 1999a). All privatized units would be made available to military families, during the term of the agreement, on a preferential basis and at prescribed rents.

The proposed PPV housing partnership in South Texas would allow for the building and renovation of family housing and support facilities more quickly and cost-effectively than continued stewardship under the DOD. This would result in a positive impact by eliminating the family housing shortage in the region and improving the quality of the housing available to military families. The proposed PPV partnership would also result in less financial hardship on military families, which results in a higher quality of life for military personnel.

Group 1 - Senior Officers' Quarters (SOQs), Total Homes: 15

SOQs 2 through 10, King Drive. SOQs 2 through 10 would be repaired and renovated based on coordination with the SHPO. This work would occur over a two to three year period at an estimated cost of \$2.0 million 1999 dollars, including revitalization of the Hospital SOQs. These units would be rented for \$887.56 per month, not including utilities (U.S. Navy, 2000y and 1999a).

Hospital SOQs, HA through HE, Ninth Street Vicinity. The Hospital SOQs would be repaired and renovated based on coordination with the SHPO. This work would occur over a two to three year period at an estimated cost of \$2.0 million in 1999 dollars, including revitalization of SOQs 2 through 10 (U.S. Navy, 2000y). Rent for these units would range between \$861.46 and \$943.00 per month, not including utilities (U.S. Navy, 2000y and 1999a).

SOQ 12, Avenue D. SOQ 12 would be privatized under the proposed action. This unit would be rented for \$962.26 per month, not including utilities (U.S. Navy, 2000y and 1999e).

Group 2 - Married Officers Quarters (MOQs), Total Units: 72

MOQs 14 through 31, Yorktown Drive. The MOQs would be demolished under the proposed action, and are non-historic units. Underground and aboveground utilities would be removed, with the exception of water and sewer mains.

Proposed Housing Area. The proposed development of new MOQ units and replacement family housing units would occur on the site of the MOQs following their demolition. The site plan and design shall be based on high quality master planning that complement the recently completed Laguna Shores housing. Townhouses or duplexes are preferred in lieu of apartments. New construction must meet all standards and codes specified in the Navy's solicitation, and shall include pedestrian walkways and landscaping. Pay grades between E1 and O5 will be furnished 2-, 3-, and 4-bedroom housing units (U.S. Navy, 2000a; U.S. Navy, 2000y). Rents, not including utilities, would range between \$458.08 and \$723.18 per month (U.S. Navy, 1999a and 2000y).

Group 3 - Fiscal Year 1966 (FY 66) Housing, Total Units: 350

The proposed action includes demolition and replacement of the FY 66 housing units. The first phase would include construction of 65 new housing units in the MOQ housing area, and construction of 20 new housing units in the undeveloped portions of the 27-acre (11-ha) FY 66 housing area. The second phase of demolition/construction would include demolition of 350 FY 66 housing units and construction of 310 new housing units in the two FY 66 housing areas (U.S. Navy, 2001k). This work would be phased so that as units are demolished, families would be temporarily housed in existing or new family housing units (U.S. Navy 2001i). Rents, not including utilities, would range between \$479.59 and \$610.78 per month (U.S. Navy, 2000y and 1999a).

Group 4 - Laguna Shores Housing, Total Units: 100

Enlisted Married Housing, Buildings 1 through 50, Laguna Shores. The Laguna Shores housing would be privatized under the proposed action. Rents, not including utilities, would range between \$483.19 and \$838.64 per month (U.S. Navy, 2000y and 1999a).

Other Facilities

Mobile Home Housing, Viking Drive. The mobile home housing would be privatized under the proposed action. The current monthly rent and service charges for the mobile home park are \$75.02 per pad.

NAVSTA Ingleside

Alternative Sites C and E – Ingleside and Aransas Pass

The proposed development of 155 new units would occur on land owned by the PPV partner located in the vicinity of NAVSTA Ingleside. The site plan and design would be based on high quality master planning, similar to other recently completed Laguna Shores Navy housing. Townhouses or duplexes are preferred in lieu of apartments. New construction must meet all standards and codes specified in the Navy's solicitation, and shall include pedestrian walkways and landscaping.

This new housing would be available to pay grades E1 through E9, and include a mix of 2-, 3-, and 4-bedroom housing units (U.S. Navy, 2000a; U.S. Navy, 2000y). Rent for the 155 new housing units to be constructed near NAVSTA Ingleside would range from \$453.00 to \$885.00 per month, including utilities (U.S. Navy, 2000y). If no active military family demand exists, short-term rental to non-qualified tenants and civilians at market rates may be permitted.

4.1.2 Earth Resources

Topography

Implementation of the proposed PPV partnership would have no direct impact to topography. The construction related activities to be conducted at NAS Corpus Christi would involve the demolition of existing units, repair/renovation of existing units and the construction of new housing units. The construction related activities to be conducted at Alternative Sites C and E would involve the construction of new housing units and associated infrastructure. Topography at the proposed sites could be minimally altered in the case of any site grading, renovation, or construction activities. Some minor excavation may be required for some types of buildings and for placement of underground utilities during these activities; however, elevations in the area would remain generally unchanged.

Geology and Soils

Construction activities which affect more than 5 acres (2 ha) would require preparation of a Notice of Intent (NOI) under the requirements of the NPDES General Permit for Construction Activities. The requirements of the NOI include the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). This SWPPP must include erosion and sediment controls, including interim and permanent stabilization practices. Recommended methods of erosion control include the use of silt fences, hay bales, check dams, and temporary vegetation or straw cover.

NAS Corpus Christi

No significant impacts to soils or geology are expected from the implementation of the proposed PPV partnership. Construction, demolition, or renovation activities at the station would not affect

soil characteristics, but may cause the top layers to mix. These activities may also temporarily increase soil erosion. There are no prime and unique farmland soils located on NAS Corpus Christi.

Alternative Sites C and E – Ingleside and Aransas Pass

No significant impacts to soils or geology are expected from the implementation of the proposed PPV partnership. Construction and property maintenance activities at these sites would not affect soil characteristics, but may cause the top layers to mix. These activities may also temporarily increase soil erosion. There are no prime and unique farmland located at Alternative Sites C and E.

4.1.3 Air Resources

Impacts to air quality during construction, demolition, and renovation of facilities are expected to be short-term. The potential air emission sources during these activities could include front-end loaders, trucks, and other diesel-powered construction equipment. Temporary increases in dust emissions in the immediate vicinity of these sites are likely to occur resulting in increased atmospheric opacity. Fugitive dust from construction and demolition can be prevented from being airborne through adherence to local ordinances and implementation of the following measures:

- Use of water to control dust generated by the demolition of existing buildings or structures, construction operations, and during the clearing and grading of land.
- Application of water to dirt paths, gravel roads, materials, stockpiles, and other surfaces that can produce airborne dust over extended periods.
- Periodic street sweeping and/or wetting down of paved roadway surfaces.

Construction machinery exhaust emissions are estimated to be of relatively short duration and of moderate intensity. Since construction equipment and activities are required to meet standards for exhaust emissions, and these exhaust emissions are expected to be of relatively small quantities, no significant long-term deterioration of air quality is expected. The pollutants emitted to the ambient air directly or indirectly from the proposed construction/renovation activities would not measurably impact the ambient air quality of the region and would not jeopardize compliance with state and federal ambient air quality standards. There would be no regulated air emissions from the housing units.

Operation of motor vehicles is expected to be the primary mode of transportation to and from the proposed housing units. While motor vehicles associated with residential housing would generate emissions such as carbon monoxide and nitrogen oxides, they are anticipated to have no effect on the local air environment. Military personnel on the waiting list already reside in the area so that no change in air emissions related to motor vehicle operation would be expected. Thus, implementation of the PPV partnership would not jeopardize compliance with state and federal ambient air quality standards.

Nueces County and San Patricio County are in attainment for NAAQS criteria pollutants; therefore, the proposed federal action will not require a conformity analysis, according to the General Conformity Rule (40 CFR 6, 51, and 93).

Two special air quality protection measures have been implemented for Nueces County and San Patricio County. One protection measure includes the use of particulate matter best management practices to suppress or limit the release of dust emissions to the environment (30 TAC, Chapter 111, Subchapter A). The other special air quality protection measures limit the volatile organic compound

content of asphalt used in paving projects (30 TAC, Chapter 115, Subchapter F). The PPV privatization contractor would be required to comply with these requirements.

Proper disposal of any asbestos wastes generated through demolition and renovation efforts at NAS Corpus Christi would be conducted as directed by the Clean Air Act National Emission Standards for Hazardous Air Pollutants (40 CFR 61.40 through 157). Removal and disposal of any materials and soils known to contain LBP would be conducted in accordance with applicable regulations (U.S. Navy, 1999a). The PPV partner would be responsible for obtaining any necessary air permits, and for following all applicable laws and regulations related to hazardous waste removal and disposal.

4.1.4 Sound Environment

Short-term impacts on community noise levels during demolition and/or construction activities at NAS Corpus Christi and construction activities at Alternative Sites C or E would include noise from construction/demolition equipment, and noise from construction/demolition vehicles traveling to and from the construction sites. Construction-related equipment noise levels generally range from 76 dB for hoist operations, 85 dB for backhoe operations, to a maximum of 101 dB for pile driver operations. Noise levels related to the proposed construction activities at a given receptor would vary widely, depending on the phase of construction, land clearing and excavations, foundation and capping, construction of exterior walls, etc., and the specific tasks undertaken. Noise generated during construction would be short-term and would be similar to existing conditions when construction is completed. To minimize the potential impacts of construction noise to surrounding areas, the PPV partner should limit the erection/demolition of any building, or the excavation associated with construction and utility installation, to daylight hours when occasional loud noises are more tolerable. Impacts related to construction/demolition noise would not be significant.

NAS Corpus Christi

The existing and proposed housing areas are not major generators of noise; however, these sites are located at NAS Corpus Christi, which generates noise from aircraft operations (*Figure 3-1*). Residential development in areas below the 65 DNL noise contour is a compatible land use according to Department of Defense AICUZ program guidelines. Impacts related to noise would not be significant.

Alternative Sites C and E – Ingleside and Aransas Pass

The residential activities to be conducted at the housing areas at Alternative Sites C or E would result in noise levels typical of an urban residential area and would vary from approximately the low-50 to mid-60 dB level, depending on the time of day and activities being conducted. No significant noise impacts related to residential activities would be anticipated.

Traffic noise impacts resulting from the trips generated from the additional proposed housing units proposed would be minor. Additional trips can be expected from the 155 new housing units (Institute of Transportation Engineers, 1997). The proposed action would result in an average daily traffic increase of 11.6 percent over existing traffic along SH 361 at Alternative Site C and a 9 percent increase on Avenue A at Alternative Site E. Highway planning studies indicate that a doubling of traffic volume generally results in a 3-dB increase in noise levels, if the roadway geometry does not change. A 3-dB change is considered barely perceptible to humans (TxDOT,

1996). Noise generated by the predicted percentage increases in traffic volume that would be expected along Avenue A and SH 361 would be less than 1 dB; thus, no significant impacts would be anticipated.

A portion of Alternative Site C along the SH 361 right-of-way is located in a noise zone mapped at 74 dB. This level would decrease to 68 dB at 100 feet (30.48 m) from the right-of-way and to 68 dB a distance of 300 feet (91.44 m) from the right-of-way. Traffic noise levels would decrease appreciably to 57 dB at a distance of 1,000 feet (304.8 m) from SH 361. Depending upon actual final placement of the housing units in proximity to the highway, the noise level may be reduced. Materials used for standard construction for housing projects can be expected to reduce indoor noise levels by 20 dB. With the exception of units facing the highway, further noise reductions would occur with distance, and the first row of housing units nearest the highway would reduce noise levels on the remainder of the property. The PPV partner should consider further engineered noise reductions for the first row of housing units and/or other noise reduction measures, such as berms or landscaping measures, to achieve a noise reduction of 5 dB in these housing units. Site design should allow for construction of playgrounds in the rear of the property to provide for a better noise environment in these areas. Impacts to noise would not be significant with appropriate site design and the implementation of noise reduction measures in the housing units nearest the highway.

Alternative Site E is located approximately 300 feet (91.44 m) from the nearest roadway. Due to distances from the highway, noise from automobile traffic on the highway should not be of concern at this site.

4.1.5 Water Resources

Implementation of the proposed PPV partnership would result in no significant impacts to water resources; however, a temporary increase in soil erosion would be experienced during construction or renovation activities. Construction activities that affect more than 5 acres (2 ha) would require preparation of a NOI under the requirements of the NPDES General Permit for Construction Activities and implementation of a SWPPP. Both the SWPPP and the Navy require erosion and sediment controls, including interim and permanent stabilization practices (U.S. Navy, 1999a). Recommended methods of erosion control include the use of silt fences, hay bales, check dams, and temporary vegetation or straw cover. All construction zones would be landscaped to reduce erosion and sedimentation problems as soon as possible following construction activities.

NAS Corpus Christi

Construction, demolition, and renovation impacts to permanent surface fresh waters and groundwater are not expected. After the property is developed, impacts to water resources may occur through runoff from impervious surfaces such as buildings, parking lots, and cleared areas; and from accidental spills and releases during operations. Best management practices should be implemented by the PPV partner to minimize these impacts.

Site grading in the proposed housing area should be as close to the existing grade as possible (U.S. Navy, 1999a). Stormwater drainage design shall be based on a 10-year, one-hour storm frequency, and can be achieved by either drainage ditches or an underground stormwater collection system; however, ponding on the site is prohibited.

Laguna Shores is located within the 100-year floodplain (Zone A) and proposed new development is located in the 500-year floodplain (*Figure 3-2*). Executive Order 11988 - Floodplain Management requires that federal agencies avoid activities that directly or indirectly result in development of floodplain areas, where alternatives are available. The proposed new housing construction is consistent with the *Master Plan for Naval Complex Corpus Christi* (U.S. Navy, 1997b) and would occur within the 500-year floodplain. The project design would incorporate local and federal floodplain regulations and requirements to minimize potential harm within the floodplain. Corpus Christi participates in the National Flood Insurance Program (NFIP). The City of Corpus Christi has adopted FEMA guidelines regarding construction within the 100-year floodplain (Zone A). The City of Corpus Christi Building Code does not address the construction of structures within the 500-year floodplain since these areas are described as not prone to flooding. Floodplain development must be managed to prevent or minimize property damage and insurance risk. Prior to any development within the 100-year floodplain, hydrologic and hydraulic analyses would be required to determine water level changes that may occur during a flood event.

Development projects may alter or mitigate flood hazard areas and FEMA concurrence prior to construction may be requested. The FEMA's formal review and comment process is initiated by the issuance of a Conditional Letter of Map Revision (CLOMR). The goal of the CLOMR process is to identify whether a project complies with NFIP floodplain management criteria and to describe NFIP map revisions after project construction. A CLMOR is not automatically required by NFIP regulations for all projects within the 100-year floodplain. Generally, development within the 100-year floodplain is restricted unless proposed structures will be above the base flood elevation. A Letter of Map Revision (LOMR) is the official document used by FEMA to revise any FIRM. The LOMR is used to change flood zones, floodplain and floodway designations, flood elevations, and planimetric features. The LOMR is issued after development or construction and includes site drawings and as-built diagrams prepared and submitted to the appropriate FEMA Depot for review and approval. The LOMR is based on the CLOMR, is issued by FEMA, and must be implemented by the local community through FIRM revisions. LOMRs and CLOMRs are typically used for large projects involving fill material where more general floodplain boundary changes might be involved. Since the FEMA process will be implemented for new construction, an Application for TNRCC Approval of Floodplain Development Project does not need to be filed (TNRCC, 2000c). The Navy and the PPV partner will comply with the described local and federal floodplain management regulations and no impacts to floodplains are anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

After the property is developed, impacts to water resources may occur through runoff from impervious surfaces such as buildings, parking lots, and cleared areas; and from accidental spills and releases during operations. Best management practices would be required to be implemented by the PPV partner to minimize these impacts. Alternative Sites C and E are not located within a floodplain and surface water runoff would be managed by the city storm sewer system. The City of Aransas Pass requires that site-specific stormwater management and drainage plans be approved by the San Patricio County Drainage District Engineer prior to the issuance of a development permit. No impacts to water resources as a result of the proposed project are expected.

Stormwater drainage design shall be based on a 10-year, one-hour storm frequency and can be achieved by either drainage ditches or an underground stormwater collection system; however, ponding on the site is prohibited (U.S. Navy, 1999a).

4.1.6 Hazardous Materials/Hazardous Waste

NAS Corpus Christi

Proper disposal of any asbestos wastes encountered during demolition or renovation of the existing housing units at NAS Corpus Christi would be conducted as directed by the Clean Air Act National Emission Standards for Hazardous Air Pollutants (40 CFR 61.40 through 157). Removal and disposal of any materials and soils known to contain LBP above action levels would be conducted in accordance with applicable regulations (Toxic Substances Control Act, Titles I and IV, and the Occupational Safety and Health Act) (U.S. Navy, 1999a). Surveys would likely be conducted to identify potential hazardous materials, including asbestos, which would need to be managed during project implementation.

Development of new housing would not be expected to generate hazardous wastes. The NPDES permit would require that, during construction, the PPV partner immediately report any spills of regulated hazardous substances that are equal to or exceed the Reportable Quantity levels listed in 40 CFR 110, 117, and 302 to the National Response Center. The PPV partner would also be required to submit a written description of the spill to the U.S. EPA Regional Office, would be responsible for any required clean-up, and would be required to modify the site pollution prevention plan to document these steps. The PPV partner would be required to comply with all applicable federal, state, and local laws and regulations related to accidental spills of hazardous substances and protection of surface water and groundwater (33 USC 1251 et seq.; 42 USC 9601 et seq.; 42 USC 6901 et seq.). Friable asbestos, LBP hazards, and lead in soils, if present, would be properly managed and disposed meeting environmental compliance standards and regulations. Therefore, impacts related to the generation, storage, treatment, or disposal of hazardous waste would not be significant.

Chlordane, used as a pesticide for termite control, was applied to housing foundations at NAS Corpus Christi prior to 1989. The chlordane was applied in accordance with manufacturer's instructions, and is not considered a hazardous substance or waste in its current state. The proposed demolition and construction of family housing at NAS Corpus Christi will disturb soils in the existing FY 66 and MOQ housing areas. Under the leasing agreement, the PPV partner will provide a risk management plan for exposure to pesticides in disturbed soils created during the redevelopment of NAS Corpus Christi housing by the PPV partner. The management plan will set forth procedures to determine the pesticide exposure risk to human health and/or the environment, if any, and provide the procedures that will be implemented to mitigate or manage any and all risks from pesticide exposure. With these procedures, it is not anticipated that there would be a significant impact from residual chlordane.

Alternative Sites C and E – Ingleside and Aransas Pass

No recognized conditions of environmental concern indicating a release or past release of hazardous or petroleum substances were noted for Alternative Sites C or E during site visits, in environmental database records, or in previously conducted environmental studies.

Development of Alternative Sites C or E for military housing would not be expected to generate hazardous wastes except for paint and related wastes. These wastes would be properly managed and disposed of by the PPV partner after construction. The NPDES permit would require that, during construction, the PPV partner immediately report any spills of regulated hazardous substances that are equal to or exceed the Reportable Quantity levels listed in 40 CFR 110, 117, and 302 to the National

Response Center. The PPV partner would also be required to submit a written description of the spill to the U.S. EPA Regional Office, would be responsible for any required clean-up, and would be required to modify the site pollution prevention plan to document these steps. The PPV partner would be required to comply with all applicable federal, state, and local laws and regulations related to accidental spills of hazardous substances and protection of surface water and groundwater (33 USC 1251 et seq.; 42 USC 9601 et seq.; 42 USC 6901 et seq.). The PPV partner would be responsible for disposing any wastes generated during construction, according to applicable federal, state, and local regulations. Impacts related to hazardous waste generation, storage, treatment, and disposal would not be significant.

Grounds and building maintenance would require the use of pesticides and herbicides to control plant and animal pests. The site and any landscaping would be designed to reduce the use of fertilizers and pesticides (U.S. Navy, 1999a). The PPV partner or a pest control subcontractor would be responsible for handling and administering these materials in compliance with the appropriate federal and state regulations, and impacts would not be expected to be significant.

4.1.7 Services and Utilities

Electrical Service

NAS Corpus Christi

CP&L Company supplies electrical service to NAS Corpus Christi. The 45 additional housing units would use approximately 58,840 kilowatt hours monthly, based on historical electrical consumption of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). Under the PPV partnership, it is likely that military families would consume slightly less electricity in the proposed housing than in existing housing, due to the more energy-efficient design required by the Navy (U.S. Navy, 1999a). New utility lines will be required to service the new housing areas, and should be designed to meet the specifications set forth in the Navy's solicitation. The Navy will continue maintenance of the through streets and main utility systems (U.S. Navy, 1999a). The PPV partner will maintain the streets that are solely contained in the housing area. The PPV partner will also maintain the electrical feeders from the step down transformers to the units. The majority of military families expected to move into the new housing units already live within the CP&L service area and are considered part of the area consumers. The CP&L Company has indicated that there is a sufficient generating capacity in the area to handle the anticipated increase in residential use associated with the proposed action (CP&L, 2000). No significant impacts related to electrical usage would be anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

CP&L Company supplies electrical service to Aransas Pass and Ingleside. The proposed 155 housing units would use approximately 201,000 kilowatt hours monthly, based on historical electrical consumption of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). Under the PPV partnership, it is likely that military families would consume slightly less electricity in the proposed housing than in existing housing, due to the more energy-efficient design required by the Navy (U.S. Navy, 1999a). New utility lines will be required on the property, and should be designed to meet the Navy's specifications set forth in the solicitation. Existing utility lines service most alternative housing sites. In areas without utility service lines, the municipality will extend or provide required connections. There is a sufficient generating capacity in the area to handle an

increase in residential use (CP&L, 2000). No significant impacts related to electrical usage would be anticipated.

Natural Gas Service

NAS Corpus Christi

The City of Corpus Christi supplies natural gas to NAS Corpus Christi. The 45 additional housing units would use approximately 135,800 cubic feet (3,845 cubic m) monthly, based on historical natural gas consumption of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). New utility lines will be required to service the new housing areas, and should be designed to meet the specifications set forth in the Navy's solicitation. The PPV partner will maintain all water, sewer, and gas laterals from the tap at the main line to the units. If there was a slight increase in area usage, there is sufficient generating capacity in the area for projected residential use rates (U.S. Navy, 2000k). No significant impacts related to natural gas usage would be anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

Reliant Energy Entex supplies natural gas to Ingleside and Aransas Pass. The proposed 155 housing units would use approximately 467,700 cubic feet (13,250 cubic m) monthly, based on historical natural gas consumption of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). New utility lines will be required on the property, and should be designed to meet the Navy's specifications set forth in the solicitation. Utility lines are present in the vicinity of each site. In areas without utility service lines, the municipality will extend or provide required connections. There is sufficient generating capacity in the area to handle this increase in residential use (Reliant Energy Entex, 2000a and 2000b). No significant impacts related to natural gas usage would be anticipated.

Potable Water Service

NAS Corpus Christi

The City of Corpus Christi supplies water service to NAS Corpus Christi. The 45 additional housing units would use 553,000 gallons (2.1 million liters) of water monthly, based on historic water use of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). New utility lines will be required to service the new housing areas, and should be designed to meet the specifications set forth in the Navy's solicitation. The Navy will continue maintenance of streets and main utility systems (U.S. Navy, 1999a). The PPV partner will maintain all water, sewer and gas laterals from the tap at the main line to the units. There is sufficient capacity to handle this increase demand (CP&L Company Economic Development Department, 1999). No significant impacts related to potable water usage would be anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

The San Patricio Municipal Water District supplies water service to the residents of the City of Ingleside. The proposed 155 housing units would use 1.9 million gallons (7.2 million liters) of water monthly, based on historic water use of NAS Corpus Christi's Laguna Shores family housing (U.S. Navy, 2000k). New utility lines will be required on the property and should be designed to meet the Navy's specifications set forth in the solicitation. Utility lines are present in the vicinity of each site.

In areas without utility service lines, the municipality will extend or provide required connections. There is sufficient capacity to handle the projected increase in residential use of potable water (Greater Corpus Christi Business Alliance, 1999). No significant impacts related to potable water usage would be anticipated.

Wastewater Service

NAS Corpus Christi

NAS Corpus Christi provides wastewater treatment service. The 45 additional housing units would discharge 331,800 gallons (1.25 million liters) of wastewater per month, based on data for the Laguna Shore family housing (U.S. Navy, 2000k). Additional utility lines will be required to service the new housing areas and should be designed to meet the specifications set forth in the Navy's solicitation. The Navy will continue maintenance of streets and main utility systems (U.S. Navy, 1999a). The PPV partner will maintain all water, sewer and gas laterals from the tap at the main line to the units. Based on information provided, there is sufficient capacity to transport and treat projected wastewater volumes since the lift station located near Building 176, the Child Development Center, will be used (U.S. Navy, 2000k). No significant impacts related to wastewater treatment and disposal would be anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

The Cities of Ingleside and Aransas Pass both provide wastewater treatment service to area residents. The proposed 155 housing units would discharge 1.14 million gallons (4.3 million liters) of wastewater per month, based on data provided from Laguna Shores at NAS Corpus Christi (U.S. Navy, 2000k). Based on information provided, there is sufficient capacity to transport and treat projected wastewater volumes (TC&B, 2000a and 2000b). New utility lines will be required on the property and should be designed to meet the Navy's specifications set forth in the solicitation. Utility lines are present in the vicinity of each site. In areas without utility service lines, the municipality will extend or provide required connections. No significant impacts related to wastewater treatment and disposal would be anticipated.

Solid Waste Service

NAS Corpus Christi

Solid waste is taken to the Elliot Landfill in Nueces County. The proposed construction of new housing units would not significantly increase the number of military families in the City of Corpus Christi or impact the ability to collect and dispose municipal solid waste. The Elliot Landfill has indicated that there is sufficient capacity to handle the expected solid waste generation volumes (Elliot Landfill, 1999). No significant impacts related to municipal solid waste disposal would be anticipated.

Alternative Sites C and E – Ingleside and Aransas Pass

Browning and Ferris Industries provides residential solid waste services for the Cities of Ingleside and Aransas Pass. The EPA estimates that the average person generates approximately 4.3 pounds (1.95 kg) of solid waste per day (U.S. EPA, 1998b). Of the 155 families who would occupy the proposed housing units at Alternative Site C, approximately 25 of these families already live within

the City of Ingleside; therefore, 130 families would be new residents. These 130 families would include approximately 400 persons. Based on this estimate and the average solid waste generation rate, an additional 1,720 pounds (780 kg) of solid waste would be generated by new residents of the City of Ingleside. Of the 155 families who would occupy the proposed housing units at Alternative Site E, approximately 10 of these families already live within the City of Aransas Pass; therefore, 145 families would be new residents. These 145 families would include approximately 445 persons. Based on this estimate and the average solid waste generation rate, an additional 1,914 pounds (868 kg) of solid waste would be generated by new residents of the City of Aransas Pass. There is sufficient capacity to handle the projected increase in the volume of solid waste generated at Alternative Sites C and E (Browning Ferris Industries, 2000). No significant impacts related to municipal solid waste disposal would be anticipated.

4.2 BIOLOGICAL ENVIRONMENT

Implementation of the No Action Alternative would result in no new construction of family housing units at NAS Corpus Christi or at any of the alternative sites, and no privatization and renovation of the existing housing units at NAS Corpus Christi. Thus, there would be no change to existing vegetation, wildlife, threatened and endangered species, and wetlands environment as a result of the implementation of the No Action Alternative.

4.2.1 Vegetation

NAS Corpus Christi

As discussed in *Section 3.2.1*, most of the vegetation at NAS Corpus Christi is maintained by regular mowing and most native prairie species have been replaced by introduced species, including a variety of grasses, ornamental shrubs, and trees. Construction of family housing at NAS Corpus Christi would include removal of some of the existing vegetation. Following construction, the housing area would be replanted and landscaped in a manner compatible with existing landscaping at NAS Corpus Christi. Small assemblages of live oak (*Quercus virginiana*) and redbay (*Persea borbonia*) still exist on some of the site and would not be affected by the proposed construction. The submerged beds of seagrasses in nearby Corpus Christi Bay and Laguna Madre would not be impacted by the proposed action. Stormwater runoff and runoff from construction would be directed into existing stormwater structures. Erosion control measures and best management practices (BMPs) would be used to minimize runoff from the construction areas during construction. There would be no significant impact to vegetation as a result of implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Development of Alternative Site C would result in the loss of approximately 20 (8 ha) acres of live oak/redbay woodlands vegetation. The USFWS has stated that the dense foliage of the site is important for animals, local birds, and migratory songbirds (USFWS, 2000). Based on a review of color infrared aerial photography, approximately 400 acres (162 ha) of similar habitat exists within a one-mile (1.6 km) radius of the site, and a regional habitat assessment published in 1997 identified over 2,400 acres (970 ha) of similar habitat within a 10-mile (16-km) radius of NAVSTA Ingleside (U.S. Navy, 1997a). Because development of this site would result in the loss of only approximately one percent of live oak/redbay habitat in the 10-mile radius area, there would be no significant impact to vegetation as a result of implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Development of PPV housing at Alternative Site E could result in the loss of approximately 30 acres (12 ha) of live oak/red bay woodlands vegetation. Approximately five acres of the 55-acre (22 ha) site is currently cleared or disturbed. The PPV partner plans to remove approximately 30 acres (12 ha) of woodlands vegetation and re-grade portions of the site. A review of color infrared aerial photography identified approximately 550 acres (223 ha) of similar habitat existing within a one-mile (1.6-km) radius of the site, and a regional habitat assessment published in 1997 identified over 2,400 acres (970 ha) of similar habitat within a 10-mile (16-km) radius of NAVSTA Ingleside (U.S. Navy, 1997a). This site contains approximately two percent of the total similar habitat in the 10-mile (16-km) radius area. Following construction, the developed portion of the site would be landscaped with ornamental plantings similar to other Navy housing areas in the vicinity. Although up to 30 acres (12 ha) of habitat will be lost at Alternative Site E, many acres of similar habitat exist within the area, and no significant impacts to this habitat type would result due to implementation of the PPV partnership at this site.

USFWS and TPWD expressed concerns regarding loss of live oak/redbay woodlands habitat in the Coastal Bend area (see *Appendix A*). Although no requirement exists to acquire like habitat, the PPV partner will donate funds for the purpose of acquiring and preserving habitat that is ecologically comparable to the habitat at Alternative Site E as a method to promote stewardship of the live oak/redbay woodlands habitat in the Coastal Bend area.

4.2.2 Wildlife

Fish and Shellfish

NAS Corpus Christi

As discussed in *Section 3.2.2*, the estuarine, intertidal flats, and emergent marsh in areas adjacent to NAS Corpus Christi contain valuable habitat for juvenile, commercially important finfish and shellfish. Stormwater runoff and runoff from construction would be directed into existing stormwater structures. Erosion control measures and BMPs would be used to minimize runoff from the construction areas during demolition and construction. No significant impact to fish and shellfish in areas within or adjacent to NAS Corpus Christi would be anticipated as a result of implementation of the PPV partnership.

Alternative Site C - Ingleside

Alternative Site C is approximately 2.0 miles (3.2 km) from Corpus Christi Bay and contains no habitat for fish or shellfish. No significant impacts to fish and shellfish would be anticipated as a result of implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Alternative Site E is approximately 2.0 miles (3.2 km) from Redfish Bay and contains limited habitat for shellfish. The seasonal wetlands potentially present on the site would not be expected to support populations of fish or shellfish. The small pond on the site presumably supports a small population of fish species. Because of the limited habitat for fish and shellfish, no significant impacts to fish and shellfish would be anticipated as a result of implementation of the PPV partnership at Alternative

Site E. The PPV partner plans to modify the wetlands to create stormwater detention ponds. These detention ponds could provide some habitat for wildlife.

Reptiles and Amphibians

NAS Corpus Christi

Species of terrestrial amphibians and reptiles inhabiting portions of NAS Corpus Christi housing area under construction would be temporarily or permanently displaced or would relocate to similar habitat elsewhere in or around the housing area. The death of some smaller, less mobile terrestrial amphibians and reptiles is an unavoidable consequence of demolition and construction activities; however, this would not be a significant impact to terrestrial amphibian and reptile species within the area because the habitat at NAS Corpus Christi is limited for reptiles and amphibians.

Sea turtle strandings are infrequent on the inshore areas of Corpus Christi Bay and no known strandings have occurred on the sandy shoreline of the NAS Corpus Christi. Limited habitat and urbanization are limiting factors for sea turtles at NAS Corpus Christi. No significant impacts to sea turtles would be anticipated as a result of the implementation of the PPV partnership.

Alternative Site C - Ingleside

Alternative Site C would be expected to support terrestrial reptiles and amphibians such as the terrestrial species that are known to occur at NAVSTA Ingleside. Implementation of the proposed action would temporarily displace or kill some of the terrestrial species of reptiles and amphibians that occur on the site. Approximately 20 acres (8 ha) of live oak/redbay woodlands habitat would be permanently lost. Newly planted vegetation would support some species of reptiles and amphibians, but diversity would be limited. No significant impacts to reptiles or amphibians would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Alternative Site E supports populations of terrestrial reptiles and amphibians common in coastal woodlands, including the terrestrial species noted in *Section 3.2.2*. Implementation of the proposed action would temporarily displace or kill some of the terrestrial species of reptiles and amphibians that occur within the area of the site that would be developed. Some reptilian species may relocate to similar undeveloped habitat on this site or on adjacent property. The PPV partner plans to modify the wetlands to create stormwater detention ponds. Depending on the design, these detention ponds could provide habitat for water-dependent species of plants and animals. Because many of these species will be displaced temporarily and could reoccupy some of the area following construction, no significant impacts to reptiles or amphibians would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E.

Birds

NAS Corpus Christi

Many species of passerines, shorebirds, gulls, terns, and raptors do or may potentially make use of NAS Corpus Christi; however, habitat is limited in the family housing area and within Laguna

Shores. No significant impact to birds would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Alternative Site C is dominated by a mature stand of live oak (*Quercus virginiana*) trees that provide nesting, roosting, and loafing cover for avian species. Construction of PPV housing on this site would cause the loss of up to 20 acres (8 ha) of this habitat and displace some local avian species; however, these species could relocate to similar habitat on adjacent property. The PPV partner would try to minimize the quantity of the live oak trees removed and incorporate as many of these trees as possible into the housing area site plan. No significant impact to birds would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Alternative Site E contains approximately 50 acres (20 ha) of woodland habitat that is nesting, roosting, and loafing cover for avian species. The PPV partner plans to remove approximately 30 acres (12 ha) of woodlands. Following construction, the developed portion of the site would be landscaped with ornamental plantings similar to other Navy housing areas in the vicinity. Implementation of the PPV partnership would cause the loss of 30 acres (12 ha) of woodlands and displace some avian species; however, these species could relocate to similar habitats on adjacent property. No significant impacts to local or migratory birds would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E.

Mammals

NAS Corpus Christi

Mammals living in association with human habitations in the vicinity of NAS Corpus Christi would be expected to be displaced but may return following demolition and construction activities. Upland areas may have native species of rodents, such as the hispid cotton rat (*Sigmodon hispidus*) and field mice (*Peromyscus* spp.) (Davis and Schmidly, 1994). Other mammalian species including, coyotes (*Canis latrans*), South Texas pocket gophers (*Geomys personatus*), and white-tailed deer (*Odocoileus virginianus*) have been observed at NAS Corpus Christi, but are not expected within the family housing area. No significant impact to mammals would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Implementation of the proposed action would cause the loss of approximately 20 acres (8 ha) of woodland habitat. Larger mammals are potential transients within Alternative Site C, though resident populations of large mammals are unlikely given the proximity of this site to developed areas. Implementation of the PPV partnership would cause the loss of some smaller mammals; however, larger species could relocate to similar habitat east of the proposed site with an increased load on carrying capacity. No significant impact to mammals would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Implementation of the proposed action would cause the loss of approximately 30 acres (12 ha) of woodland habitat. Mammal populations could relocate to similar habitat on adjacent property causing an increased load on carrying capacity. Small species could reoccupy some of the site following construction. No significant impacts to mammals would be anticipated as a result of implementation of the PPV partnership at Alternative Site E.

4.2.3 Threatened and Endangered Species

NAS Corpus Christi

Lack of contiguous suitable habitat and surrounding urbanization preclude the possibility of finding ocelot or jaguarundi in or near NAS Corpus Christi. None of the federally listed sea turtles are known to have nesting sites in the urbanized Corpus Christi Bay area. NAS Corpus Christi contains no critical habitat for these species, and their use of the sandy shoreline there is unlikely due to the urbanization of surrounding area. Slender rushpea (*Hoffmannseggia tenella*) and South Texas ragweed (*Ambrosia cheiranthifolia*) would not be expected to occur on the fine, sandy soils found at NAS Corpus Christi. Implementation of the PPV partnership at NAS Corpus Christi would not adversely affect threatened or endangered species.

Alternative Site C - Ingleside

No threatened or endangered plants or animals are known to occur within Alternative Site C. Adjacent development and lack of suitable on-site habitat make the possible occurrence of ocelot or jaguarundi at this site extremely unlikely. Slender rushpea and South Texas ragweed would not be expected on the poorly drained sandy soils found within this site. Implementation of the PPV partnership at Alternative Site C would not affect threatened or endangered species.

Alternative Site E - Aransas Pass

No known threatened or endangered plants or animals are known to occur within Alternative Site E. Adjacent development and lack of suitable on-site habitat make the possible occurrence of ocelot or jaguarundi at this site extremely unlikely. Slender rushpea and South Texas ragweed would not be expected on the poorly drained sandy soils found within this site. Implementation of the PPV partnership at Alternative Site E would not affect threatened or endangered species.

4.2.4 Wetlands

NAS Corpus Christi

No wetlands are in proximity to the proposed construction and renovation activities and no potential jurisdictional wetlands exist within the NAS Corpus Christi Family Housing area (U.S. Navy, 1997a). There would be no significant impacts to waters of the United States, including wetlands, as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

No wetlands exist within Alternative Site C based on a review of the NWI maps for Aransas Pass, Texas and Port Ingleside, Texas (USFWS, 1979). An on-site investigation revealed no areas that meet the definition of jurisdictional waters of the United States, including wetlands. There would be no significant impact to waters of the United States, including wetlands, as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

The USACE has completed jurisdictional determination for the potential wetlands identified as ponds at Alternative Site E (*Appendix A*). The wetlands located at the property are isolated, non-navigable intrastate waters that have no known nexus to interstate commerce. As such, they are not subject to USACE jurisdiction under Section 404 of the Clean Water Act. Accordingly, a USACE permit will not be required for the filling or modifying the on-site wetlands (USACE, 2001). The PPV partner plans to modify the wetlands to create stormwater detention ponds. These detention ponds could provide habitat for water-dependent species of plants and animals.

4.3 SOCIOECONOMIC ENVIRONMENT

Implementation of the No Action Alternative would result in no new construction of family housing units at NAS Corpus Christi or at any of the alternative sites, and no privatization and renovation of the existing housing units at NAS Corpus Christi. Thus, there would be no change to the existing community setting, land use, or aesthetics at NAS Corpus Christi or any of the proposed sites. There would be no change to the existing population, demographic profile, economy, employment, income, housing, schools, child care services, or local emergency services in Nueces County, San Patricio County; the City of Corpus Christi; or the Cities of Aransas Pass and Ingleside. There would be no impacts related to environmental justice or cultural resources as a result of the No Action Alternative.

4.3.1 Community Setting and Land Use

Development at NAS Corpus Christi or Alternative Sites C or E would parallel current growth trends within the communities of Corpus Christi, Aransas Pass, and Ingleside. The site design would conform to varying terrain conditions to provide attractive residential patterns and streetscapes. Site development would provide a balance of structures, common green spaces with native landscaping, recreational areas, street lighting, and pedestrian and vehicular circulation, consistent with good land use planning and practices. Plant material would comply with local municipality landscaping requirements (U.S. Navy, 1999a).

NAS Corpus Christi

The construction of the proposed housing units would be compatible with existing surrounding land use and planned development at NAS Corpus Christi. The housing areas that are included in the proposed action are not located within any clear zones or APZs (U.S. Navy, 1985, 1997b, 1999a, and 2000y). Residential land use within a clear zone is not compatible with AICUZ program guidelines (U.S. Navy, 1988) (see *Section 4.3.8*). No significant impact to the community setting or land use would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Alternative Site C is undeveloped. Construction of PPV housing would change land use to residential, which would be compatible with existing surrounding land use and future planned land use in areas surrounding the site (City of Ingleside, 1999). No significant impact to the overall community setting or land use would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

As discussed in *Section 3.3.1*, the northern and northeastern portions (approximately two-thirds of the site, or 18.0 acres [7.3 ha]) of Alternative Site C, are zoned as Multi-family Residential, while the southern and southwestern portions (or 9.0 acres [3.6 ha]), are zoned as General Commercial (City of Ingleside, 1999) (*Figure 3-7*). Permitted uses under Multi-family Residential include any use permitted within a 3- and 4-family residential district, and multi-family dwellings. Permitted uses under General Commercial zoning do not include single- or multi-family housing developments (City of Ingleside, 1997).

The PPV partner would be required to obtain a building permit and file an application to reclassify zoning for a portion of the site (approximately 4.4 acres [1.8 ha]) that is not already zoned to permit multi-family residential use (City of Ingleside, 2000b; U.S. Navy, 2000x). If a portion of the site were to be rezoned to accommodate multi-family residential development, the PPV partner would be required to abide by residential design standards and other requirements set forth in the city zoning ordinance (City of Ingleside Zoning Ordinance, Division 6, Section 78-191 through 78-194). These requirements include height and area, parking and loading, and signage regulations (City of Ingleside, 1997).

The City of Ingleside's *Comprehensive Master Plan*, adopted in 1994, is consistent with the city's zoning ordinance and establishes zoning districts. The *Comprehensive Master Plan* does not put limits on the number of multi-family or single-family residential developments proposed for the City. A portion (approximately 4.4 acres [1.8 ha]) of Alternative Site C is zoned general commercial. This area would need to be re-zoned to permit multi-family residential development and to be consistent with the city's *Comprehensive Master Plan* (City of Ingleside, 2000b; U.S. Navy, 2000x).

Alternative Site E - Aransas Pass

Alternative Site E is undeveloped. Construction of housing would change land use to residential, which would be compatible with existing surrounding land use. As discussed in *Section 3.3.1*, Alternative Site E is not located within the incorporated city limits of the City of Aransas Pass and is not zoned (City of Aransas Pass, 1996 and 2000b). The PPV partner would be required to submit a permit application to the Aransas Pass Planning and Zoning Commission. If the permit is approved by the City Council, it is likely that the site would be annexed into the city and zoning would be assigned to the site at that time. The PPV partner would be required to comply with Section 24-2 of the Aransas Pass Code of Ordinance, which regulates subdivision platting and zoning in Aransas Pass' extraterritorial jurisdiction (City of Aransas Pass, 2000b; TC&B, 2000b). No significant impact to the overall community setting or land use would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E.

4.3.2 Aesthetics

The aesthetics of the family housing areas at NAS Corpus Christi would be improved after demolition of the old housing units (72 MOQs) and construction and revitalization of other housing units. The 15 historic housing units included in the proposed action would be revitalized in a manner that would preserve their historic architectural character, in coordination with the SHPO (U.S. Navy, 2000y). The visual aspect of Alternative Sites C or E would change with the removal of natural vegetation and the construction of residential structures and related facilities.

The PPV partner would be required under the Navy's PPV solicitation to provide for an aesthetically pleasing view using landscaping. The grading design for the proposed housing units at NAS Corpus Christi, and at Alternative Sites C or E, would be completed as close to existing elevations as possible to provide attractive residential patterns and to permit preservation of existing trees. Site development would provide a balance of structures, common green spaces, landscaping, and site entrances that include aesthetic landscaping. Landscaping would require the preferential use of regionally native plants and minimize adverse effects on the natural habitat when possible. Plant material would comply with any local municipality landscaping requirements (U.S. Navy, 1999a).

The implementation of the proposed project at NAS Corpus Christi and at Alternative Sites C or E would be consistent with adjacent development and surrounding land use and visual aspects. No significant adverse impacts to visual aesthetics would be anticipated as a result of the implementation of the PPV partnership.

4.3.3 Population and Demographics

A total of approximately 602 persons would live in the 196 additional PPV family housing units, based on planning ratios derived from the waiting list (U.S. Navy, 2000n, 2000o, 2000t, and 2000u). The other 4 housing units are designated for resident managers of the PPV partnership housing. Since the majority (88 percent or more) of the 196 military families are projected to already live within the Corpus Christi area (see *Section 3.3.3*), which includes the Cities of Aransas Pass and Ingleside, no significant impact to the overall population or demographic profile of the overall Corpus Christi area would be anticipated as a result of the implementation of the PPV partnership.

NAS Corpus Christi

Of the military families who would occupy 43 proposed housing units at NAS Corpus Christi, approximately 27 of these families already live within the City of Corpus Christi, which includes Flour Bluff; therefore, 16 families would be new residents of Corpus Christi (*Table 4-1*). These 16 families would include approximately 50 persons. These 50 persons would increase the total population of the City of Corpus Christi, estimated at 296,339 persons, by less than 1.0 percent. No significant impact to population or demographic profile would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Of the 153 military families who would occupy the proposed housing units at Alternative Site C, approximately 23 of these families already live within the City of Ingleside; therefore, 130 families would be new residents of Ingleside (*Table 4-1*). These 130 families would include approximately 400 persons. These 400 persons would increase the total population of the City of Ingleside,

estimated at 8,022 persons, by approximately 5.0 percent. No significant impact to population or demographic profile would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Of the 153 military families who would occupy the proposed housing units at Alternative Site E, approximately 8 of these families already live within the City of Aransas Pass; therefore, 145 families would be new residents of Aransas Pass (*Table 4-1*). These 145 families would include approximately 445 persons. These 445 persons would increase the total population of the City of Aransas Pass, estimated at 9,458 persons, by approximately 4.5 percent. No significant impact to population or demographic profile would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E.

4.3.4 Economic Activity

Implementation of the PPV partnership would have a positive effect on the local economy, employment, income, and tax revenues. The Navy would contribute no more than \$29.4 million to the privatization effort, including land, renovation, and DLPs. Based on fairly recent PPV housing projects completed in the South Texas Region, the total construction cost is estimated at \$67.2 million.

Project planning, design, and construction activities would generate additional employment, income, and sales tax revenues in the area over the short-term. The economic effects of the project can be estimated by using the Texas State Comptroller Office's input-output model, which has multipliers for employment and income related to new residential construction. When multiplied by the total construction costs of the project, the factors produce estimates of the economic impacts of project construction on a statewide basis. The proportion of economic effects retained locally depends on capturing local materials and labor during the construction process. Direct effects include those arising from the purchases made by the new residential construction sector. Direct costs include wages and salaries paid to workers directly engaged in the project's construction process, as well as capital costs for equipment, materials, and supplies during construction. Induced effects of the project are generated by the consumption of goods and services made possible by the payrolls associated with the construction project. Indirect effects are the sum of all the rounds of purchases by all the interrelated sectors of the state economy (including direct, induced, and all additional effects), beginning with those that supply the suppliers of the new residential construction sector. Indirect effects distribute throughout the economy at each round of purchases. Construction of the new housing units and renovation of the existing housing units would generate approximately 1,611 jobs (285 direct and 1,326 indirect) and \$50.6 million in income (\$14.9 million direct and \$35.7 million indirect) (Texas State Office of the Comptroller, 1986).

Over the long-term, property tax revenues within San Patricio County would increase. The land and housing units at NAS Corpus Christi would not be taxed. The land and housing structures at Alternative Sites C or E would be taxed. The increase in property taxes would provide some additional funding for local schools; roadway improvements; utilities; fire, police, and emergency services; and other local services provided by San Patricio County; and the cities of Aransas Pass or Ingleside. No significant impacts to the local economy, employment, or income would be anticipated as a result of the implementation of the PPV partnership.

4.3.5 Environmental Justice

Executive Order 12898

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs on minority and low-income populations. The three proposed alternative sites and NAS Corpus Christi are not located within or adjacent to any Census Block Groups that are predominately minority or low-income communities, when compared to the overall racial/ethnic composition of Nueces County, San Patricio County, and the Cities of Corpus Christi, Aransas Pass, and Ingleside, based upon the 1990 Census information. Low-income or minority populations would not be expected to be disproportionately and adversely affected by the implementation of the PPV partnership.

The U.S. Department of the Navy has not directly or indirectly used criteria, methods, or practices that discriminate on the basis of race, color, or national origin in the preparation of this document. All reference material used to describe the existing environment and to evaluate potential environmental impacts are commonly available reference sources, and do not discriminate on the basis of race, color or national origin.

Executive Order 13045

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates that federal agencies identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of federal policies, programs, activities, and standards. There are no public schools located within a 0.50-mile (0.80-km) radius of NAS Corpus Christi. Cook Elementary and Gilbert Mircovia Elementary Schools are located approximately 0.50 mile (0.80 km) southwest and south, respectively, of Alternative Site C (*Figure 2-7*). Alternative Site E is located southwest of and immediately adjacent to Aransas Pass High School, A.C. Blunt Middle School, and Charlie Marshall Elementary School (*Figure 2-8*).

There are residential neighborhoods, commercial establishments, and SH 361 between Alternative Site C and the nearby schools. McMullen Lane and the school's ball fields lie between Aransas Pass ISD school buildings and Alternative Site E. The school buildings are located approximately 500 feet (152 m) north and northeast of Alternative Site E. Air emissions and noise generated during construction activities at Alternative Sites C and E would be short-term in duration. Short-term air emissions and noise would be significantly diminished within the distance between the nearby schools and Alternative Sites C and E. The structures (i.e., residential and commercial buildings) between the proposed sites and the nearby schools would further aid in diminishing short-term noise produced during construction at Alternative Site C.

The proposed housing units, recreational facilities, and other amenities, such as tot-lots, would be designed and constructed in accordance with Consumer Product Safety Commission Standards and other applicable standards, such as is required under the Lead-Based Paint Poisoning Prevention Act and U.S. Department of Housing and Urban Development (HUD) Regulations. Existing and new playgrounds within the PPV housing areas would be maintained by the PPV partner to ensure child safety. Residential street and area lighting would be provided throughout the site, and an emphasis would be placed on safe pedestrian accessibility to recreation areas. Cautionary street signage, such as "Children at Play" signs, would be posted as needed (U.S. Navy, 1999a). No disproportionate

environmental health or safety risks to children would be anticipated as a result of the implementation of the PPV partnership.

4.3.6 Housing

Implementation of the PPV partnership would provide a positive benefit to both military families and the community by providing additional available housing. Additional military family housing at NAS Corpus Christi (43 units) and at Alternative Site C or E (153 units) would provide affordable and suitable housing to military families on the family housing waiting list who at this time are living within the community where they pay market rents, which often exceed military allowances, and compete with the civilian population for available supply. A total of 196 military families would no longer be required to go out-of-pocket to accommodate their housing and utility needs. The 72 MOQs, which are uninhabited, would be demolished and replaced with new housing units on-station and off-station near NAVSTA Ingleside. The 350 FY 66 housing units would be demolished and replaced on-station (U.S. Navy, 2001i). The other existing family housing units at NAS Corpus Christi, with the exception of Laguna Shores and SOQ 12, would be renovated, which would improve their overall quality, safety, and appearance (U.S. Navy, 1999a). Implementation of the PPV partnership would benefit the community by making available 196 rental housing units currently occupied by military families in the Corpus Christi and Ingleside areas. There would be no significant impacts to area housing as a result of the implementation of the PPV partnership.

4.3.7 Education and Child Care

Education

The land at NAS Corpus Christi on which the housing units (existing and proposed units) are located is not taxed, since it is owned by the federal government. As PPV housing, the housing unit structures (existing and proposed) at NAS Corpus Christi would not be taxed. The land and housing structures at Alternative Sites C or E would be taxed. The increase in property taxes would provide some additional funding for local schools and other local services provided by San Patricio County and the cities of Aransas Pass or Ingleside. The local ISDs within which the proposed PPV housing would be located would receive annual Federal Impact Aid for each additional student whose parent(s) is a military member.

NAS Corpus Christi

Of the 43 military families who would occupy the new, replacement housing units at NAS Corpus Christi, approximately 6 of these families already live within Flour Bluff ISD; therefore, 37 families would be new residents within Flour Bluff ISD (*Table 4-1*). These 37 families would include approximately 44 children. Approximately 22 would be school-age children (i.e., ages 5 through 17, kindergarten through grade 12), based on the family housing waiting list. *Table 4-2* lists the number of children by age and grade. Flour Bluff ISD would spend approximately \$131,362 annually to educate the 22 additional students, and would receive approximately \$22,220 annually in Federal Impact Aid for these students. There is adequate available classroom space and teachers to accommodate the additional 22 students (*Table 4-3*) (Flour Bluff ISD, 2000a, 2000b, and 2001).

**TABLE 4-1 FAMILY HOUSING WAITING LIST AND PLACE OF RESIDENCE
ESTIMATES**

Station Assignment and Place of Residence for Families on the Waiting List	Families on the Waiting List by Station and Residence		Number of Families to Reside in the Proposed PPV Housing Units	
	Number on Waiting List	% of Total on Waiting List	On-Station	Off-Station
NAS Corpus Christi				
Corpus Christi	67	38%	16	60
Flour Bluff ⁽¹⁾	15	9%	4	14
Ingleside	0	0%	0	0
Portland	4	2%	1	3
Aransas Pass	2	1%	0	0
Other Area ⁽²⁾	2	1%	0	1
<i>Subtotal</i>	<i>90</i>	<i>51%</i>	<i>21</i>	<i>78</i>
NAVSTA Ingleside				
Corpus Christi	21	12%	5	18
Flour Bluff ⁽¹⁾	8	4%	2	6
Ingleside	28	16%	6	23
Portland	10	6%	3	9
Aransas Pass	8	5%	2	8
Other Area ⁽²⁾	8	5%	2	8
<i>Subtotal</i>	<i>83</i>	<i>48%</i>	<i>20</i>	<i>72</i>
NAS Kingsville				
Corpus Christi	0	0%	0	0
Flour Bluff ⁽¹⁾	0	0%	0	0
Ingleside	0	0%	0	0
Portland	1	0%	1	1
Aransas Pass	0	0%	0	0
Other Area ⁽²⁾	2	1%	1	2
<i>Subtotal</i>	<i>3</i>	<i>1%</i>	<i>2</i>	<i>3</i>
Total	176	100%	43	153

⁽¹⁾Flour Bluff is located within the incorporated city limits of Corpus Christi.

⁽²⁾Some of the families living in other areas that are outside of Corpus Christi, Portland, Aransas Pass, and Ingleside incorporated city limits do live in nearby areas within the Corpus Christi area, such as Taft and Rockport.

Source: U.S. Navy, 2000n, 2000o, 2000t, and 2000u

TABLE 4-2 NUMBER OF CHILDREN ON THE WAITING LIST AND ESTIMATED NEW STUDENT ENROLLMENT WITHIN PROJECT-AREA ISDs

Number of Children on the Family Housing Waiting List				Total Children to Reside in the Proposed PPV Housing Units		Total Children who would be New Residents within the Project Area ISDs		
Grade	Age	Total	% of Total	On-Station	Off-Station	Flour Bluff	Aransas Pass	Ingleside
Infants, Toddlers, and Pre-Schoolers								
-	<1	22	11%	5	20	5	19	17
-	1	14	7%	4	13	3	12	11
-	2	28	13%	7	23	6	21	19
-	3	14	7%	4	13	3	12	11
-	4	22	11%	5	20	5	19	17
<i>Subtotal</i>	-	<i>100</i>	<i>49%</i>	<i>25</i>	<i>89</i>	<i>22</i>	<i>83</i>	<i>75</i>
School-Age Children (Grades K - 12)								
K	5	19	9%	5	16	4	15	14
1	6	15	7%	4	13	3	12	11
2	7	12	6%	3	11	3	10	9
3	8	6	3%	1	5	1	5	4
4	9	10	5%	3	10	2	9	8
5	10	6	3%	1	5	1	5	4
6	11	10	5%	3	10	2	9	8
7	12	4	2%	1	3	1	4	3
8	13	6	3%	1	5	1	5	4
9	14	7	3%	1	5	1	5	4
10	15	4	2%	1	3	1	4	3
11	16	5	2%	1	3	1	4	3
12	17	3	1%	1	3	1	1	3
<i>Subtotal</i>	-	<i>107</i>	<i>51%</i>	<i>26</i>	<i>92</i>	<i>22</i>	<i>88</i>	<i>78</i>
Total	-	207	100%	51	181	44	171	153

Source: U.S. Navy, 2000n, 2000o, 2000t, and 2000u

TABLE 4-3 IMPACTS TO PROJECT-AREA ISDs

School (Grade)	Total Capacity	2000-2001 Enrollment	Number of New Students to ISD (Grades K – 12)	Total Students	Student Capacity Deficit*	Number of Additional Classrooms Required*	Number of Additional Teachers Required*
Flour Bluff ISD							
Flour Bluff Early Childhood Center (K)	725	323	4	327	None	None	None
Flour Bluff Primary (1 – 2)	990	689	6	695	None	None	None
Flour Bluff Elementary (3 – 4)	1,210	712	3	715	None	None	None
Flour Bluff Intermediate (5 – 6)	1,500	738	3	741	None	None	None
Flour Bluff Jr. High (7 – 8)	1,425	822	2	824	None	None	None
Flour Bluff High (9 – 12)	2,125	1,523	4	1,527	None	None	None
Total	7,975	4,807	22	4,829	None	None	None
Aransas Pass ISD							
Faulk Early Childhood Center (K – 1)	440	320	27	347	None	None	1 to 2
W.A. Kieberger Elementary (2 – 3)	500	365	15	380	None	None	0 to 1
Charlie Marshall Middle School (4 – 5)	500	338	14	352	None	None	None
A.C. Blunt Middle School (6 – 8)	750	477	18	495	None	None	None
Aransas Pass High (9 – 12)	640	560	14	574	None	None	0 to 1
Total	2,830	2,060	88	2,148	None	None	1 to 4
Ingleside ISD							
Cook Primary (K – 1)	399	313	25	338	None	None	1 to 2
Gilbert Mircovia Elementary (2 – 4)	660	510	21	531	None	None	1 to 2
Blaschke/Sheldon Elementary (5 – 6)	392	327	12	339	None	None	0 to 1
Taylor Jr. High (7 – 8)	575	301	7	308	None	None	0 to 1
Ingleside High (9 – 12)	800	544	13	557	None	None	0 to 1
Total	2,826	1,995	78	2,073	None	None	2 to 7

*Due to the new students within the ISD who would live in the proposed PPV housing.

Source: Flour Bluff ISD, 2000a and b, and 2001; Aransas Pass ISD, 2000; Ingleside ISD, 2000a, b, c, and d

Alternative Site C - Ingleside

Of the 153 military families who would occupy the proposed housing units at Alternative Site C, approximately 23 of these families already live within Ingleside ISD; therefore, 130 families would be new residents within Ingleside ISD (*Table 4-1*). These 130 families would include approximately 153 children. Approximately 78 would be school-age children (i.e., ages 5 through 17, kindergarten through grade 12), based on the family housing waiting list. *Table 4-2* lists the number of children by age and grade. Ingleside ISD would spend approximately \$440,466 annually to educate the 78 additional students and would receive approximately \$7,295 annually in Federal Impact Aid for these students.

For the past nine years, the average student population growth rate in the Ingleside ISD has been 2.95 percent per year. The Gilbert Mircovia Elementary, Blaschke/Sheldon Elementary, and Cook Primary schools will reach critical capacity (defined as 90 percent of the total capacity) in 2001, 2002, and 2003, respectively, without the proposed project. The Ingleside ISD has stated that there are no plans to construct any new schools or expand any existing schools (Ingleside ISD, 2000d); however, immediate planning to provide for the projected number of students appears necessary based on the average student population growth estimates. By 2003, Ingleside ISD would likely require a new school campus, or comparable alternative, to accommodate the projected number of new students. This critical capacity condition at Ingleside ISD exists without consideration of the proposed PPV partnership. *Table 4-3* summarizes the potential number of additional classrooms and teachers that would be required in kindergarten through grade 12 as a result of 78 additional PPV housing project students based on current student enrollment statistics and the total capacity of the Ingleside ISD schools (Ingleside ISD, 2000a, 2000b, and 2000c). Regardless of the proposed project, the Ingleside ISD will need to construct new schools or provide alternative plans for the projected number of new students based on the average student population growth rate.

Alternative Site E - Aransas Pass

Of the 153 military families who would occupy the proposed housing units at Alternative Site E, approximately 8 of these families already live within Aransas Pass ISD; therefore, 145 families would be new residents within Aransas Pass ISD (*Table 4-1*). These 145 families would include approximately 171 children. Approximately 88 would be school-age children (i.e., ages 5 through 17, kindergarten through grade 12), based on the family housing waiting list. *Table 4-2* lists the number of children by age and grade. Aransas Pass ISD would spend approximately \$493,328 annually to educate the 88 additional students, and would receive approximately \$968 annually in Federal Impact Aid for these students (Aransas Pass ISD, 2000).

No additional classrooms would be required for any grade and no new teachers would be required at either of the two middle schools (grades 4 through 8). One to two additional teachers would be required at Faulk Early Childhood Center. One additional teacher could be required at both the elementary school and the high school. A total of 1 to 4 additional teachers would be required within the ISD (kindergarten through grade 12). *Table 4-3* summarizes the potential number of additional classrooms and teachers that would be required in kindergarten through grade 12 as a result of 88 additional students (Aransas Pass ISD, 2000).

Child Care

The 196 military families who would live in the proposed PPV housing would include approximately 114 children who are age four and below. The capacity of the on-station childcare center is 117 children, and total enrollment is 80 children; therefore, there is space for 37 additional children. There is no waiting list for the on-station childcare center. There are 15, 7, and 13 private childcare providers located within 10 miles (16 km) of Aransas Pass and Ingleside, respectively, and approximately 100 private children care providers located throughout Corpus Christi. The majority (88 percent or more) of the families who would occupy the PPV housing units at NAS Corpus Christi, or Alternative Sites C or E, already reside within the Corpus Christi area, and are expected to already be using child care services offered at NAS Corpus Christi and within the community, if needed. No significant impacts related to childcare services would be anticipated as a result of the implementation of the PPV partnership.

4.3.8 Health and Safety

Accident Potential Zones

The existing and proposed housing areas that are included in the proposed action are not located within any clear zones or APZs. Of all of the existing family housing at NAS Corpus Christi (*Figure 2-1*), only SOQ 11 is located in a clear zone (U.S. Navy, 1985, 1997b, and 1999a); however, SOQ 11 is not included in the proposed action (U.S. Navy, 2000r and 2000y). Residential land use within a clear zone is not compatible with AICUZ program guidelines (U.S. Navy, 1988). There are no APZs at NAVSTA Ingleside, or Alternative Sites C or E, since no aircraft operations are conducted at or adjacent to these sites. No direct or indirect impacts related to NAS Corpus Christi's clear zones or APZs would occur as a result of the implementation of the PPV partnership.

Electromagnetic Radiation Arcs

The existing Laguna Shores housing area is located near the theoretical EMR arc associated with the 500-watt transmitters adjacent to Building 1721. The existing MOQs and SOQs HA and HE are located near or within this EMR arc. SOQs HA through HE are located near the EMR arc associated with the transmitter at the Naval Hospital. Part of the FY 66 housing is in the Naval Hospital EMR arc. The southern portion of the existing MOQ housing area is located within the EMR arc associated with the 500-watt transmitters adjacent to Building 1721 (U.S. Navy, 1997b). Emissions from the transmitters will be controlled during specific HERO unsafe or HERO susceptible ordnance operations (U.S. Navy, 1997b). Since this is the case, no significant impact related to NAS Corpus Christi EMR arcs would be anticipated as a result of the implementation of the PPV partnership. No ordnance is stored or transmitted in the area of Alternative Sites C or E and no EMR arcs are generated; therefore, there no impacts to health and safety would occur.

Police and Security

NAS Corpus Christi

Security for the PPV family housing NAS Corpus Christi would be provided by the NAS security force, and purchased from NAS Corpus Christi by the PPV partner (U.S. Navy, 1999a). Since the NAS is under exclusive federal jurisdiction, the PPV partner would be required to make arrangements with the Navy and/or the City of Corpus Christi regarding any modifications to the

current police protection services on-station. No significant impact to police protection services or response times would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Site C - Ingleside

Police protection services to Alternative Site C would be provided by the Ingleside Police Department. The increase in property taxes would provide some additional funding for local police protection services provided by the City of Ingleside. No significant impact to police protection services or response times would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C (Ingleside Police Department, 2000).

Alternative Site E - Aransas Pass

Police protection services to Alternative Site E would be provided by the Aransas Pass Police Department. The increase in property taxes would provide some additional funding for local police protection services provided by the City of Ingleside. No significant impact to police protection services or response times would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E (Aransas Pass Police Department, 2001).

Fire Protection

Smoke detectors would be provided in each newly constructed housing unit, in accordance with the National Fire Association Life Safety Code. A minimum of two fire hydrants would be provided within 500 feet (152 m) of each newly constructed building, as measured via route of fire apparatus traveled. No housing units would be more than 350 feet (107 m), by paved road, from a fire hydrant, as measured from the furthest portion of the building. The fire hydrants would be located 3 to 7 feet (0.9 to 2.1 m) from pavement, would not be located in sidewalks or where obstructed by parked vehicles, and would have a blue reflective street marker. Hose threads and fire hydrant colors would conform to local requirements (U.S. Navy, 1999a).

Fire protection services for the PPV family housing at NAS Corpus Christi would be provided by the NAS fire department, and purchased from NAS Corpus Christi by the PPV partner (U.S. Navy, 1999a). Fire protection services at Alternative Sites C and E would be provided by the Aransas Pass Fire Department and the Ingleside Volunteer Fire Department, respectively. The increase in property taxes would provide some additional funding for local fire protection services provided by the respective municipalities. No significant impact to NAS or community fire protection services or response times would be anticipated as a result of the implementation of the PPV partnership (U.S. Navy, 2000i; Ingleside Volunteer Fire Department, 2000 and 2001).

Hospitals

The majority (88 percent or more) of the military families who would live in the new PPV housing already live within the Corpus Christi area (which includes the Cities of Ingleside and Aransas Pass) and receive medical care at either the on-station medical clinics at NAS Corpus Christi or NAVSTA Ingleside, or at hospitals in the Corpus Christi area. No significant impact to the area hospitals or other medical facilities would be anticipated as a result of the implementation of the PPV partnership.

Emergency medical service calls are handled through 911 (U.S. Navy, 1998a). Emergency medical service to NAS Corpus Christi is provided by on-station emergency medical technicians and by the City of Corpus Christi. Tri-County Emergency Medical Services Inc., which typically operates at 65 percent of their service capacity, provides emergency medical service to Alternative Site C and E. The 155 additional multi-family units would probably increase calls by 3 to 5 percent. The increase in property taxes would provide some additional funding for local emergency medical services provided by the respective municipalities. No significant impact to EMS services or response times would be anticipated as a result of the implementation of the PPV partnership (Corpus Christi Fire Department, 2000; Tri-County Emergency Medical Services Inc., 2000).

4.3.9 Transportation

Ground Transportation

The proposed on-station PPV housing units are not expected to create significant additional travel demand in the Corpus Christi area. The proposed action to construct 155 new housing units by the PPV partnership at one of the alternative sites could create a minor increase in additional travel demand to the immediately adjacent street or highway. Based on information published by the Institute of Transportation Engineers, a typical household generates approximately 7.5 trips per person each weekday (Institute of Transportation Engineers, 1997). For the 155 new units at Alternative Site C, or E, this would result in an additional 1,148 trips per day to adjacent roadways. For the 45 new units NAS Corpus Christi, this would result in an additional 323 trips per day to adjacent roadways.

NAS Corpus Christi

An estimated 21 of the 43 military families that would move on-station from off-station housing would be stationed at NAS Corpus Christi; approximately 20 of these 21 families already live within Corpus Christi. It is estimated that 20 of the 43 families that would move on-station would be stationed at NAVSTA Ingleside, and 2 of the 43 families would be stationed at NAS Kingsville; approximately 7 of these 22 families already live in Corpus Christi. A total of approximately 27 of the 43 families already live in Corpus Christi; therefore, an overall total of 16 additional families would be new residents of Corpus Christi (*Table 4-1*).

The proposed additional 43 on-station housing units would slightly reduce the number of commute trips by military personnel to the NAS, since 21 military personnel who are stationed at NAS Corpus Christi would move on-station from current off-station housing. The number of travel trips by these 21 families on the Corpus Christi roadway network could be less than current numbers, since work commute trips would not be on public streets to arrive at work locations at NAS Corpus Christi, and shopping trips could be to on-station service facilities. The 22 military personnel stationed at either NAVSTA Ingleside or NAS Kingsville would make commuting work trips, and contribute to traffic on the Corpus Christi roadway network, particularly on N.A.S. Drive. Overall, work commute trips by military personnel to and from NAS Corpus Christi, therefore, would be similar to existing conditions.

The majority (27 families) of the additional 43 military families who would live in the proposed PPV housing at NAS Corpus Christi already live within Corpus Christi; therefore, daily trips generated by these families are already part of the overall traffic mix in Corpus Christi. Because many of the new residents would work at the NAS, fewer trips outside of NAS Corpus Christi would be anticipated;

however, as a worst-case scenario, the 43 families could generate 323 vehicle trips per day. This would represent an approximate 1.8-percent increase over the existing traffic volumes on N.A.S. Drive, which carries approximately 18,400 vehicles per day, and operates at LOS C. The additional traffic would not affect the LOS of N.A.S. Drive, which would continue to operate at LOS C even with the additional traffic volume (Institute of Transportation Engineers, 1997). Roadways servicing NAS Corpus Christi have adequate capacity to accommodate the potential additional trips without adversely affecting mobility and circulation. No significant impact to area roadways or traffic would be anticipated as a result of the implementation of the PPV partnership at NAS Corpus Christi.

The contractor would be responsible for constructing any new streets within the NAS to service the proposed housing units. The Navy would maintain the streets in the PPV housing areas at NAS Corpus Christi (U.S. Navy, 1999a).

Alternative Site C - Ingleside

Alternative Site C is located adjacent to SH 361 in Ingleside. ADT on SH 361 near Alternative Site C would increase by approximately 11.6 percent due to trips generated by residents who would live within the PPV housing at Alternative Site C. This increase would cause the existing LOS of SH 361 to increase from LOS A to LOS B; however, the roadway has adequate capacity to accommodate the additional traffic (Institute of Transportation Engineers, 1997). No significant impact to area roadways or traffic would be anticipated as a result of the implementation of the PPV partnership at Alternative Site C.

Alternative Site E - Aransas Pass

Alternative Site E in Aransas Pass is located adjacent to Avenue A, near Business 35. ADT on Business 35 near Alternative Site E would increase by approximately 9.0 percent due to trips generated by residents who would live within the PPV housing at Alternative Site E. The LOS of the Business 35 would not be affected by this addition, and the roadway has adequate capacity to continue to operate at LOS B (Institute of Transportation Engineers, 1997). No significant impact to area roadways or traffic would be anticipated as a result of the implementation of the PPV partnership at Alternative Site E.

Air Transportation

The existing and proposed housing areas that are included in the proposed action are not located within any clear zones or APZs. Of the existing family housing at NAS Corpus Christi (*Figure 2-1*), only SOQ 11 is located in a clear zone (U.S. Navy, 1985, 1997b, and 1999a); however, SOQ 11 is not included in the proposed action (U.S. Navy, 2000y and 2000r). Residential land use within a clear zone is not compatible with AICUZ program guidelines (U.S. Navy, 1988). Impacts related to aircraft noise are discussed in *Section 4.1.3*. There are no APZs at NAVSTA Ingleside or Alternative Sites C or E, since no aircraft operations are conducted at or adjacent to these sites.

4.3.10 Recreation

The PPV partner would provide recreational facilities, such as tot-lots and playgrounds, near the new housing areas. A paved trail for biking, jogging, and pedestrian use would be constructed in the new housing area at NAS Corpus Christi, and it would connect to the existing housing area, where

practicable (U.S. Navy, 1999a). The recreational facilities and other amenities, such as tot-lots, would be designed and constructed in accordance with Consumer Product Safety Commission Standards and other applicable standards, such as is required under the Lead-Based Paint Poisoning Prevention Act and HUD Regulations. Existing and new playgrounds within the PPV housing areas would be maintained by the PPV partner to ensure child safety. Residential street and area lighting would be provided throughout the site, and an emphasis would be placed on safe pedestrian accessibility to recreation areas. Cautionary street signage, such as “Children at Play” signs, would be posted, as needed (U.S. Navy, 1999a).

The majority (88 percent or more) of the families who would live in the new PPV housing already live within the Corpus Christi area (which includes the Cities of Ingleside and Aransas Pass) and use recreational facilities provided at either NAS Corpus Christi or NAVSTA Ingleside, or within the Corpus Christi area. No significant impact related to recreational resources would be anticipated as a result of implementation of the PPV partnership at NAS Corpus Christi or Alternative Sites C or E.

4.3.11 Cultural Resources

NAS Corpus Christi

Of the 537 housing units at NAS Corpus Christi included in the proposed action, 15 possess sufficient significance and integrity to meet NRHP criteria. There are seven historic districts and one individual property (the Navy Brig, Building 252) at NAS Corpus Christi that possess sufficient significance and integrity to meet NRHP criteria (U.S. Navy, 1994c). Three of the seven historic districts at NAS Corpus Christi are associated with the housing units that are included within the proposed action. SOQs 2 through 10, located in the King Drive Historic District; SOQ 12, located in the Lexington Boulevard Historic District; and SOQs HA through HE, located in the Ninth Street Historic District, have been identified as possessing sufficient significance and integrity to meet National Register criteria (U.S. Navy, 1994b, 1994c, and 1999a). These historic housing units, except for SOQ 12, would be repaired and renovated in coordination with the SHPO (U.S. Navy, 2000y).

There are no known archeological sites located within or directly adjacent to the existing or proposed PPV housing areas at NAS Corpus Christi (U.S. Navy, 1994c). If, however, any archeological or historical remains are uncovered during construction or demolition activities, construction/demolition would cease, and the Texas Historical Commission would be notified. Through coordination with the SPHO and implementation of any protective covenants and required mitigation agreements, no significant impacts to cultural resources would result from the implementation of the PPV partnership at NAS Corpus Christi.

Alternative Sites C and E – Ingleside and Aransas Pass

Alternative Sites C and E are undeveloped. No sites that are listed in the NRHP or as State Archeological Landmarks exist at Alternative Sites C or E, and no other archeological or historical sites have been reported at any of the three alternative sites (TARL, 2000a and 2000b; THC, 2000; U.S. Navy, 2000v). If, however, any archeological or historical remains are uncovered during construction activities, construction would cease, and the Texas Historical Commission would be notified. Through coordination with the SPHO and implementation of any required mitigation agreements, no significant impacts to cultural resources would result from the implementation of the PPV partnership at Alternative Sites C or E.

4.4 CUMULATIVE IMPACTS

Cumulative impacts are those changes to the physical, biological, and socioeconomic environments that would result from the combination of construction, operation, and associated impacts resulting from the proposed action when added to other past, present, and reasonably foreseeable actions. Past projects, or those implemented or built before 2001, can be considered part of the existing conditions environment baseline presented in this EA. Included within the concept of past projects are all maintenance activities, land development projects, and other actions that occurred before detailed analysis began on this EA.

The majority of the proposed development identified for the Aransas Pass area is commercial, with no planned residential development. The largest new commercial development being planned in Aransas Pass is Wal-Mart to be constructed along FM 1069 near US 35. This facility will stock groceries and other perishables, in addition to standard household products and small appliances. Currently, there is only one full-service grocery store in Aransas Pass; lack of competition may have increased local costs for food and non-prescription drugs. Water, wastewater, telephone, natural gas and other utilities are being extended to the site in support of this construction. Based on recent planning, the store will employ at least 20 full-time and 40 part-time workers with most of the part-time employees being local high school students and local residents currently employed in similar positions elsewhere. Health-care and other benefits (stock options) would be provided for full-time employees. Long-term commercial and residential development for the area is minimal and no significant cumulative impacts would therefore be expected.

There are three single-family housing developments, ranging from 50 to 100 lots each, that are either under construction or will be constructed in Ingleside in the near future (City of Ingleside, 2000b). Once fully occupied, these total 150 to 300 units would house approximately 465 to 930 persons, based on the average household size in San Patricio County. It is estimated that of these 465 to 930 persons, 151 to 302 would be children, with 114 to 228 being school-age children (age 5 to 17). Approximately 45 to 89 of these children would be between age 5 and 9 (kindergarten through grade 4, based on 1990 Census data (MSCDC, 1999)). There is a 144-unit multi-family housing development planned in Ingleside (City of Ingleside, 2000b). Once fully occupied, these 144 units would house approximately 446 persons, based on the average household size in San Patricio County. It is estimated that of these 446 persons, 145 would be children, with 109 being school-age children (age 5 to 17). Approximately 43 of these children would be between age 5 and 9 (kindergarten through grade 4), based on 1990 Census data (MSCDC, 1999).

Although specific plans are not available for the new private construction in the project area, it can be assumed that the recent and proposed housing construction, including the proposed project, could result in the development of a total of 147 to 229 acres (59 to 93 ha), based on standard lot sizes. Since the proposed PPV partnership and the majority of the new construction permits in the area are housing projects, it can be expected that the potential impacts from these activities would be similar. Impacts to physical resources related to construction activities, such as noise, air quality, erosion, would not result in significant cumulative impacts since they are typically localized and temporary. Long-term noise impacts to adjoining areas due to increased traffic would be slight (less than one dB) based on information contained in highway planning studies. Residential activities would generally produce noise levels from the low-50 to the mid-60 dB level, depending on the time of day and activities ongoing at the time. Noise levels around the commercial establishments would generally be in the mid-60 to mid-70 dB range, depending on the time of day and activities ongoing at the time. Since the majority of the persons that would reside in the housing probably already live in the region, no significant cumulative impacts to regional air quality would be anticipated.

With the development of the PPV partnership housing that has recently been constructed and is planned by the proposed action, an estimated 125 to 229 acres (50 to 93 ha) of existing vegetation has been or would be removed. Most of the undeveloped land in the project area consists of vegetation that is similar to Alternative Sites C and E—wooded with an understory of shrubs and herbaceous vegetation. Live oak/redbay woodlands makes up a large part of both sites. Although the proposed project contributes to a cumulative loss of this type of habitat, there are over 2,400 acres (970 ha) of similar habitat within a 10-mile (16-km) radius of NAVSTA Ingleside. If selected by the Navy, the PPV partner for Alternative Site E would donate funds for the purpose of acquiring and preserving habitat that is ecologically comparable to the habitat that will be impacted. This plan is proposed to promote stewardship of live oak/redbay habitat in the Coastal Bend Area. Although up to 30 acres (12 ha) of habitat would be lost at Alternative Site E, development would not result in significant cumulative impacts since more than 2,400 acres (970 ha) of similar habitat exists within a 10-mile (16-km) radius of the site.

The overall cumulative impacts to the regional population, demographics, employment, and local services in Nueces County and San Patricio County would be minor. San Patricio County's multiple family housing building permit activity reached a peak of approximately 400 permits in 1996. This level was anomalous as the trend since 1980 is less than 150 multi-family permits issued per year. After a very high level of multiple family permit activity in Nueces County (for projects in Corpus Christi) in the early 1980's, when approximately 10,000 units were permitted in four years, the level of permits dropped dramatically in 1985 and 1986 and remained at minimal levels for several years. In 1995, for the first time in 10 years, over 300 permits for multiple family units were issued in one year. In 1996, permits for 485 multiple family units were issued, 761 in 1997 and 398 in 1998. Including the proposed project, impacts to regional utilities would be minor with existing supply capacities sufficient for demand. With the development of the housing projects in the area, there would be an initial cumulative impact on local school districts. There would be approximately 88 new students to Aransas Pass ISD and 301 to 415 new students to Ingleside ISD by they year 2005, as a result of the reasonably foreseeable future residential development, excluding the proposed project. As a result, additional teachers and possibly additional classrooms or schools would be required within each ISD. In the long-term, property tax revenues within Nueces County and San Patricio County will be increased due to the new development, including the proposed project. It may also be that school taxes would be raised to help manage the projected increase in the student population. The increase in property taxes would provide some additional funding for local schools; roadway improvements; utilities; fire, police, and emergency services; and other local services provided by Nueces County, San Patricio County; the City of Corpus Christi; and the Cities of Aransas Pass or Ingleside. The local ISDs within which the proposed PPV housing would be located would receive annual Federal Impact Aid for each additional student whose parent(s) is a military member.

4.5 COMPLIANCE WITH VARIOUS LAND USE POLICIES AND CONTROLS

A summary of the various laws and coordination requirements and the extent to which the proposed action complies or conflicts with each of these laws and requirements are presented in this section.

4.5.1 National Environmental Policy Act (42 USC 4321, et seq.)

The National Environmental Policy Act of 1969, as amended, contains policy and guidance to ensure that potential impacts from proposed federal actions are assessed using a systematic and interdisciplinary approach. This EA has been prepared in accordance with *Section 102(2)(c)* of NEPA, CEQ regulations

on implementing NEPA procedures (40 CFR 1500-1508), and Department of the Navy regulations on implementing NEPA procedures (32 CFR 775). This EA documents the environmental impacts of the proposed action; adverse environmental impacts that cannot be avoided should the proposed action be implemented; alternatives to the proposed action; the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. Agencies with jurisdiction by law or with special expertise have been consulted with during preparation of this EA.

4.5.2 Clean Air Act (42 USC 7401 et seq.)

The rules governing the determination of conformance of an action with the Clean Air Act, as amended, are set forth in 40 CFR Parts 6, 51, and 93. The Clean Air Act, as amended, provides for protection and enhancement of the nation's air resources. Particulate matter resulting from construction activities and fumes from vehicles and heavy machinery would have a short-term air quality impact on the immediate vicinity, but no permanent or long-term air quality impact on the immediate vicinity. The PPV partner would be responsible for obtaining and compliance with all applicable air quality control regulations. The 1990 Clean Air Act, as amended, established general conformity requirements that apply to federal actions in areas designated *nonattainment* for any of the criteria pollutants under the Clean Air Act. In July 1997, the U.S. EPA established a new ozone standard. The new standard states that the 3-year average of the annual fourth-highest daily 8-hour average concentration, at the same monitor, shall be no greater than 85 parts per billion (ppb) (40 CFR 50). Nueces County's fourth highest 8-hour average for 1996 and 1997 was below 85 ppb, but it was above 85 ppb in 1998 and 1999 (TNRCC, 1998; TNRCC, 2000a). When data for the year 2000 ozone readings are available, the U.S. EPA will evaluate the ozone readings for 1997 through 1999 and determine if Nueces County will remain in attainment for ozone. If Nueces County is designated nonattainment for ozone, the State of Texas will be required to submit an attainment plan for the eight-hour nonattainment areas, including possibly Nueces County, by 2003. The attainment plan must be designed to attain the 8-hour standard by the year 2010. If Nueces County and San Patricio County remain in attainment with criteria pollutants, no further action is required.

4.5.3 Clean Water Act (33 USC 1251, et seq.) and Executive Order 11990 - Protection of Wetlands

The Clean Water Act, as amended, regulates discharges to the waters of the United States. Compliance with applicable provisions of the Clean Water Act will be accomplished by coordination with the appropriate resource agencies, submittal of permit applications, if required, and response to agency review. Section 404 of the Act regulates the discharge of dredged or fill materials into navigable waters. Any point sources of pollution associated with the proposed action will comply with NPDES permit requirements. This Act would also include stormwater discharges associated with industrial activity, and those discharges originating from large and medium municipal separate storm sewer systems. Releases of stormwater runoff to area streams would adhere to state and local water quality requirements and permit conditions.

Executive Order 11990 - Protection of Wetlands directs federal agencies to take action to minimize the destruction of wetlands on their property (Executive Order 11990, Section 1[a]). The USACE has issued a jurisdictional determination for the potential wetlands identified as ponds at the Alternative Site E (*Appendix A*). The wetlands located at the property are not subject to USACE

jurisdiction under Section 404 of the Clean Water Act, and a USACE permit will not be required for the filling of these wetland resources (USACE, 2001).

4.5.4 Rivers and Harbors Act of 1899 (33 USC 401 et seq.)

Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The proposed action would not impact navigable waters of the United States.

4.5.5 Executive Order 11988 - Floodplain Management

Executive Order 11988 – Floodplain Management requires that federal agencies avoid activities that directly or indirectly result in development of floodplain areas. At NAS Corpus Christi, the Laguna Shores housing area is located within the 100-year floodplain Zone A. The other housing areas are located within the 500-year floodplain. Corpus Christi participants in the National Flood Insurance Program, and as such an Application for TNRCC Approval of Floodplain Development Project does not need to be filed. The City of Corpus Christi has adopted FEMA guidelines regarding construction within floodplain Zone A (100-year floodplain), which requires that a hydraulic analysis be performed and, in general, that structures be elevated above the base flood elevations. The PPV partner will be required to maintain structures in the 100-year floodplain (Laguna Shores) at elevations that will not impact the floodway or floodplain. The City of Corpus Christi Building Code does not address structures built within the 500-year floodplain. Impacts to floodplains would not be anticipated, as the Navy and the PPV partner will comply with the requirements of Executive Order 11988. Alternative Sites C and E are not located within a 100- or 500-year floodplain. In addition, the proposed development would be reviewed and approved by the San Patricio County drainage district engineer so that drainage issues and floodplain impacts are identified and addressed.

4.5.6 Coastal Zone Management

The Coastal Zone Management (CZMA) Act of 1972, as amended, provides for the effective management, beneficial use, protection, and development of the resources of the nation's coastal zone. The CZMA directs federal agencies proposing activities or development projects, within or outside of the coastal zone, that could affect any land or water use or natural resource of the coastal zone, to assure that those activities or projects are consistent, to the maximum extent practicable, with the approved state programs. The Texas Coastal Management Program (CMP) was approved by the National Oceanic and Atmospheric Administration on December 23, 1996, and published in the *Federal Register* on January 10, 1997. The CMP designates the coastal zone and coastal natural resource areas (CNRAs) requiring special management in that zone. These areas include coastal waters, waters under tidal influence, coastal wetlands, submerged lands and aquatic vegetation, dunes, coastal historic areas, and other resources. NAS Corpus Christi and Alternative Sites C and E are located within the coastal zone. CNRAs that could be directly or indirectly affected by the proposed project include waters under tidal influence, special hazard areas (floodplains), and coastal historic areas. As discussed in this EA, measures will be taken to minimize and mitigate potential adverse impacts to these resources; therefore, no significant impact is anticipated. The Navy and PPV partner will comply with all applicable laws and regulations to ensure that Naval activities, and those conducted by the PPV partner, will be carried out in a manner that is, to the maximum extent practicable, consistent with the CMP. The Draft EA was provided to the Texas Coastal Coordination Council for review. Their letter of May 14, 2001 (see *Appendix A*) states that they reviewed the EA,

found no impacts to the CNRAs, and determined the project is not required to be consistent with the CMP.

4.5.7 Coastal Barrier Resources

The Coastal Barrier Resources Act of 1982 requires that no new expenditures or financial assistance be made available for various construction projects within the boundaries of the Coastal Barrier Resources System. The USFWS designates coastal barrier resources. NAS Corpus Christi and Alternative Sites C and E are not located within a designated coastal barrier zone.

4.5.8 Fish and Wildlife Coordination Act (16 USC 661 et seq.) and Endangered Species Act (16 USC 1531 et seq.)

The Fish and Wildlife Coordination Act (16 USC 661-666) directs federal agencies to consult with USFWS, the National Marine Fisheries Service, and state agencies before authorizing alterations to water bodies. The purpose of the Act is to ensure that wildlife conservation receives equal consideration, and that wildlife management issues are coordinated with other features of water resources programs. Section 7 of the Endangered Species Act of 1973, as amended, requires the responsible federal agency to consult with USFWS and the appropriate state fish and wildlife agency, in this case the Texas Parks and Wildlife Department, concerning endangered and threatened species under their jurisdiction. In compliance with these regulations, appropriate federal and state agencies were contacted to determine the potential for the proposed action to impact threatened or endangered species habitat and fish and wildlife habitat. Endangered or threatened species and critical habitat would not be affected by the proposed project, and no formal Section 7 consultation is required.

4.5.9 Migratory Bird Treaty Act (16 USC Section 703 et seq.)

The Migratory Bird Treaty Act protects game, non-game, and insectivorous birds that migrate with the changing seasons. The act makes it illegal to hunt, take, capture, or kill any migratory bird without an appropriate permit. The migratory birds are listed in 50 CFR 10.13. This protection includes the bird, the bird's nests, and their eggs from hunting, killing, possession, selling, or buying unless otherwise permitted by regulations. Alternative Sites C and E contain habitat that could be used by migratory birds. It is not the intent of the Navy or PPV partner to conduct habitat modifications during the fall and spring migration or the breeding seasons. Clearing would not occur during the nesting or fledging seasons of migratory birds. The PPV partner will coordinate with the USFWS to determine the optimal time to begin construction.

4.5.10 Federal Noxious Weed Act (7 USC 2801 et seq.) and the National Invasive Species Act of 1996 (16 USC 4701)

The Federal Noxious Weed Act prohibits introducing exotic species into any natural ecosystem, and requires control or eradication of exotic species and noxious weeds from federal lands. The National Invasive Species Act of 1996 mandates a ballast water management program for armed forces vessels to demonstrate technologies and practices to prevent the introduction of aquatic non-indigenous species into waters of the United States. Under Executive Order 13112, "Invasive Species," all alien or exotic species are to be controlled on federal land to the maximum practicable extent. The Navy will ensure that naval activities, or those conducted by the PPV partner, are in accordance with federal noxious weed and invasive species programs. The Navy's ecosystem management program attempts to use native species in landscaping to the extent practicable.

4.5.11 Local Land Use Plans

Alternative Site C - Ingleside

The northern and northeastern portions (approximately two-thirds of the site, or 18.0 acres [7.3 ha]) of Alternative Site C are zoned as Multi-family Residential, while the southern and southwestern portions (or 9.0 acres [3.6 ha]) are zoned as General Commercial (City of Ingleside, 1999) (*Figure 3-7*), as discussed in *Sections 3.3.1* and *4.3.1* (City of Ingleside, 1999). Permitted uses under Multi-family Residential include any use permitted within a 3- and 4-family residential district, and multi-family dwellings (City of Ingleside, 1997).

In addition to filing a building permit, a portion (approximately 4.4 acres [1.8 ha]) of Alternative Site C would need to be re-zoned to permit multi-family residential development in order to be consistent with the city's *Comprehensive Master Plan* (City of Ingleside, 2000b; U.S. Navy, 2000x). An application to re-zone the existing general commercial use to multi-family residential use would be required of the PPV partner prior to the development of Alternative Site C (City of Ingleside, 2000b). The PPV partner would also be required to abide by residential design standards and other requirements set forth in the city zoning ordinance (City of Ingleside Zoning Ordinance, Division 6, Section 78-191 through 78-194). These requirements include height and area, parking and loading, and signage regulations (City of Ingleside, 1997).

Alternative Site E - Aransas Pass

Alternative Site E is undeveloped. If the construction of housing takes place, land use would change to residential, which would be consistent with existing surrounding land use. As discussed in *Sections 3.3.1* and *4.3.1*, Alternative Site E is not located within the incorporated city limits of the City of Aransas Pass and is not zoned (City of Aransas Pass, 2000b and 1996). The PPV partner would be required to submit a permit application to the Aransas Pass Planning and Zoning Commission. If the permit is approved by the City Council, it is likely that the site would be annexed into the city and zoning would be assigned to the site at that time. The PPV partner would be required to comply with Section 24-2 of the Aransas Pass Code of Ordinance, which regulates subdivision platting and zoning in Aransas Pass' extraterritorial jurisdiction (City of Aransas Pass, 2000b; TC&B, 2000b).

4.5.12 Administration of Environmental Policy

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*; and Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandate that federal agencies identify disproportionately high and adverse human health or environmental effects on minority and low-income populations and children. No disproportionate impact to minority or low-income persons living in surrounding areas would be anticipated as a result of the implementation of the PPV partnership. No disproportionate environmental health or safety risks to children would be anticipated as a result of the implementation of the PPV partnership.

4.5.13 National Historic Preservation Act (16 USC 470(f))

In compliance with applicable federal laws, regulations, and procedures regarding historic preservation, potential impacts to cultural resources have been evaluated. Of the 537 housing units included in the proposed action, 15 possess sufficient significance and integrity to meet National Register criteria. SOQs 2 through 10, located in the King Drive Historic District; SOQ 12, located in the Lexington Boulevard Historic District; and SOQs HA through HE, located in the Ninth Street Historic District, have been identified as historic structures (U.S. Navy, 1994b, 1994c, and 1999a). These historic housing units, except for SOQ 12, would be repaired and renovated in coordination with the SHPO (U.S. Navy, 2000y).

There are no known archeological sites located within or directly adjacent to the existing or proposed PPV housing areas at NAS Corpus Christi (U.S. Navy, 1994c). No sites that are listed in the NRHP or as State Archeological Landmarks exist at Alternative Sites C or E, and no other archeological or historical sites have been reported at any of the three alternative sites (TARL, 2000a and 2000b; THC, 2000; U.S. Navy, 2000v). If, however, any archeological or historical remains are uncovered during construction or demolition activities, construction/demolition would cease, and the Texas Historical Commission would be notified. Through coordination with the SHPO and implementation of any required mitigation agreements, no significant impacts to cultural resources should result from the implementation of the PPV partnership.

4.5.14 Prime and Unique Farmland Soils (7 USC 4201 et seq.)

The purpose of the Farmland Protection Policy Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. There are no prime and unique farmland soils located on NAS Corpus Christi, Alternative Site C, or Alternative Site E.

4.5.15 Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)

RCRA and subsequent amendments established a cradle to grave system for the tracking, management, generation, transportation, treatment, storage, disposal, and recycling of waste materials. Construction of the proposed housing units, demolition of some housing units, and long-term maintenance activities performed as part of the proposed action would not be expected to generate hazardous waste. The PPV partner would be responsible for disposing of any wastes generated during demolition or renovation of the existing housing units at NAS Corpus Christi in accordance with applicable regulations, including asbestos and lead. Impacts related to the generation, storage, treatment, or disposal of hazardous wastes would not be significant.

4.6 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Energy in the form of various fossil fuels, electricity, and natural gas would be required during construction of the PPV housing and demolition of some existing housing units. Long-term operation and maintenance activities would also consume energy resources. Energy requirements for the proposed action would have little impact on the energy requirements of the South Texas Region. The PPV private contractor would coordinate energy requirements with local suppliers. Energy efficient construction materials and devices would likely be installed at the newly-constructed housing units and would likely be upgrades planned for the exiting units. No impact to regional energy resources is expected as a result of the implementation of the proposed action.

4.7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, maintenance, and occupancy of the proposed housing units would require the commitment of various resources. These resources include the commitment of labor, capital, energy, biological resources, building materials, and land resources. Short-term commitments of labor, capital, and fossil fuels would result directly from construction of the housing units, and indirectly from the provisions of services to the site during construction. Long-term commitments of resources would result directly from maintenance and occupancy of the housing units, and indirectly from the provisions of water, sewage, electricity, gas, and solid waste services to the housing units and during demolition and construction periods.

Duration of the commitment of land resources will depend on the ultimate reuse and life of the facilities and property. Since the proposed use of the land is for housing facilities, the commitment of land resources is long-term.

4.8 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term commitments would include labor, capital, and fossil fuels that result directly from construction activities, and indirectly from the provision of services to the site during construction. Physical systems would be modified during construction. Commitments of infrastructure would exert a long-term impact on the environment of the area of the site, but no impact on the area-wide environment. Over the long term, implementation of the PPV partnership would enhance the morale and quality of life of military members stationed at NAS Corpus Christi and NAVSTA Ingleside by providing affordable housing in an efficient and cost-effective manner.

4.9 UNAVOIDABLE ADVERSE IMPACTS

Short-term adverse impacts from construction of the proposed housing units would include the following: soil disturbance and erosion, air emissions, and noise. Long-term impacts include loss of vegetation and wildlife habitat; increase in utility use; potential filling and/or excavation of non-jurisdictional wetlands at Alternative Site E; minor increases in traffic; and a slight potential for increases in local emergency service capacities.

4.10 MEANS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

If selected by the Navy, the PPV partner for Alternative Site E would donate funds for the purpose of acquiring and preserving habitat that is ecologically comparable to the habitat that will be impacted. This plan is proposed by the PPV partner to promote stewardship of live oak/redbay habitat in the Coastal Bend Area.

The NPDES permit would require that the PPV partner immediately report any spills of regulated hazardous substances that are equal to or exceed the Reportable Quantity levels listed in 40 CFR 110, 117, and 302 to the National Response Center. The PPV partner would also be required to submit a written description of the spill to the U.S. EPA Regional Office, would be responsible for any required clean-up, and would be required to modify the site pollution prevention plan to document these steps. The PPV partner would be required to comply with all applicable federal, state, and

local laws and regulations related to accidental spills of hazardous substances and protection of surface water and groundwater. Friable asbestos, LBP hazards, and lead in soils, if present, would be properly managed and disposed meeting environmental compliance standards and regulations. Under the leasing agreement, the PPV partner will provide a risk management plan for exposure to pesticides in disturbed soils created during the redevelopment of NAS Corpus Christi housing by the PPV partner. The management plan will set forth procedures to determine the pesticide exposure risk to human health and/or the environment, if any, and provide the procedures that will be implemented to mitigate or manage any and all risks from pesticide exposure.

Additional tax revenue which could be derived from taxing PPV housing would provide some additional funding for local schools; roadway improvements; utilities; fire, police, and emergency services; and other local services provided by San Patricio County and the cities of Aransas Pass or Ingleside. The local ISDs with the proposed PPV housing project would receive annual Federal Impact Aid for each additional student whose parent(s) is a military member.

5.0 LIST OF PREPARERS

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6.0 COORDINATION

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Federal, state, and local regulatory agencies and governmental entities were consulted prior to and during the preparation of this Environmental Assessment. Most agencies and government entities were either contacted in writing, by telephone, or visited during the course of the study. The agencies and governmental entities contacted are listed below. *Appendix A* contains agency response letters.

Federal

- U.S. Environmental Protection Agency, Region 6
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers, Galveston District
- Natural Resources Conservation Service
- The Honorable Phil Gramm, U.S. Senate
- The Honorable Kay Bailey Hutchinson, U.S. Senate
- The Honorable Rubén Hinojosa, U.S. House of Representatives, 15th District

State

- The Honorable George W. Bush, Jr., Governor
- The Honorable Gene Seaman, Texas House of Representatives, District 32
- The Honorable Judy Hawley, Texas House of Representatives, District 31
- Texas Natural Resource Conservation Commission
- Texas Parks and Wildlife Department
- The Nature Conservancy of Texas
- Coastal Coordination Council
- Texas Historical Commission
- Texas Archeological Research Laboratory
- Texas Department of Transportation, Corpus Christi District
- Office of the Governor, Budget and Planning

Local

- Corpus Christi Bay National Estuary Program

San Patricio County

- San Patricio County Commissioner, Precinct 4
- San Patricio County Commissioner, Precinct 2

City of Corpus Christi

- City of Corpus Christi
- Corpus Christi Fire Department
- Flour Bluff ISD

City of Portland

- The Honorable A.R. Moser, Mayor
- Mr. Mike Tanner, City Manager
- City of Portland, Building Department
- City of Portland, Public Works Department
- Portland Volunteer Fire Department
- Portland Police Department
- Gregory-Portland ISD
- Portland Chamber of Commerce

City of Aransas Pass

- Mr. Rick Ewaniszyk, City Manager
- City of Aransas Pass, Building Department
- City of Aransas Pass, Public Works Department
- Aransas Pass Fire Department
- Aransas Pass Police Department
- Aransas Pass ISD
- Aransas Pass Chamber of Commerce

City of Ingleside

- The Honorable C.H. Lewis, Mayor
- Ms. Marilyn Hall, City Manager
- City of Ingleside, Building Department
- City of Ingleside, Public Works and Utilities Department
- Ingleside Volunteer Fire Department
- Ingleside Police Department
- Ingleside ISD
- Ingleside Housing Authority
- Ingleside Chamber of Commerce

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APPENDIX A



Coastal Coordination Council

P.O. Box 12873 ♦ Austin, Texas 78711-2873 ♦ (512) 463-5385 ♦ FAX (512) 475-0680

Chairman

David Dewhurst
Texas Land Commissioner



Members

Michael L. Williams
Railroad Commission of Texas

Dr. William H. Clayton
Coastal Government
Representative

John Barrett
Agriculture Representative

Bob Dunkin
Coastal Business Representative

Jack Hunt
Texas Water Development Board

Robert J. Huston
Texas Natural Resource
Conservation Commission

John W. Johnson
Texas Transportation Commission

Elizabeth A. Nisbet
Coastal Resident Representative

Donald Swann
Texas State Soil & Water
Conservation Board

Mark E. Watson, Jr.
Parks & Wildlife Commission
of Texas



Diane P. Garcia
Council Secretary

Pat Alba, Jr.
Permitting Assistance Coordinator
1-866-894-3578

May 14, 2001

Mr. Robert Teague
Code 064RT
Southern Division, Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419

**Re: Environmental Assessment, Public-Private Venture Housing
South Texas Region, Department of the Navy**

Dear Mr. Teague:

Pursuant to Section 506.20 of 31 TAC of the Coastal Coordination Act, the project referenced above has been reviewed for consistency with the Texas Coastal Management Program (CMP).

This project and associated housing facilities in the area are considered to be on excluded federal lands. The project was reviewed for potential impacts to coastal natural resource areas within the CMP boundary. No impacts were found. Therefore, the project is not required to be consistent with the CMP.

Sincerely,

Thomas R. Calnan
Consistency Review Coordinator
Texas General Land Office

TRC



STATE OF TEXAS
OFFICE OF THE GOVERNOR

GEORGE W. BUSH
GOVERNOR

April 20, 2000

Ms. Kelly A. Krenz
Turner Collie and Braden, Inc.
P. O. Box 130089
Houston, Texas 77219-0089

RE: TX-R-20000313-0003-50-00
NAVAL STATION INGLESIDE FAMILY HOUSING

Dear Ms. Krenz:

Your environmental impact statement for the project referenced above has been reviewed. No substantive comments were received.

We appreciate the opportunity afforded to review this document. Please let me know if we can be of further assistance.

Sincerely,

A handwritten signature in dark ink, appearing to read "T. C. Adams".

T. C. Adams, State Single Point of Contact

TCA//mhr

TEXAS REVIEW AND COMMENT SYSTEM
REVIEW NOTIFICATION

Applicant/Originating Agency: Turner Collie and Braden, Inc.
Contact Name and Phone: Ms. Kelly A. Krenz / (713) 267-2849

Project Title: NAVAL STATION INGLESIDE FAMILY HOUSING

Funding Agency: DOD

SAI/EIS#: TX-R-20000313-0003-50-00

Agency Application Identifier: TC&B Job#32-00412013

Date Received: March 3, 2000

Date Comments Due BPO: 04/13/2000

===== REVIEW PARTICIPANTS =====

Bureau of Economic Geology
General Land Office
Texas Dept. of Agriculture
Texas Department of Economic Development
Texas Department of Housing and Community Affairs
Texas Historical Commission
Texas Natural Resource Conservation Commission
Texas Parks and Wildlife Department
Texas Water Development Board
Texas Department of Transportation
Coastal Bend Council of Governments


Special Notes/Comments: Summary of request for information provided by SPOC. Reviewers should contact applicant directly to additional information.

☐ No Comment.

Review Agency

Signature

Return Comments to:


T. C. Adams, State Single Point of Contact
Governor's Office of Budget & Planning
P.O. Box 12428
Austin, TX 78711
(512) 463-1771

Bureau of Economic Geology
Scott Tinker, Ph.D.
Director
University Station, Box X
Austin, Texas 78713-8924

General Land Office
Ms. LaNell Aston
Executive Assistant
Stephen F. Austin Building, Rm. 720
Austin, Texas 78711

Texas Dept. of Agriculture
Ms. Carol Funderbergh
Intergovernmental Affairs Division
P.O. Box 12847
Austin, Texas 78711

Texas Department of Economic Development
Mr. Michael West, Director
Planning Division
P. O. Box 12728
Austin, Texas 78711-2728

Texas Department of Housing and Community Affairs
Ms. Elena Peinado
Governmental Relations
P.O. Box 13941
Austin, Texas 78711-3941

Texas Historical Commission
Dr. James Bruseth
TRACS Coordinator
1511 Colorado Street
Austin, Texas 78711

Texas Natural Resource Conservation Commission
Ms. Mary Lively
Environ. Policy, Analysis & Assess MC205
P. O. Box 13087
Austin, Texas 78711-3087

Texas Parks and Wildlife Department
Mr. Robert W. Spain, Chief
Habitat Assessment Branch
4200 Smith School Road
Austin, Texas 78744

Texas Water Development Board
Mr. Ray Mathews Jr.
TRACS Coordinator
1700 North Congress Avenue
Austin, Texas 78711-3231

Texas Department of Transportation
Mr. Ken Bohuslav
TRACS Coordinator
11th & Brazos
Austin, Texas 78711

Coastal Bend Council of Governments
Mr. John P. Buckner
Executive Director
P.O. Box 9909
Corpus Christi, Texas 78469

United States Senate

WASHINGTON, DC 20510-4304

March 13, 2000

Kelly A. Krenz
Box 130089
Houston, TX 77219-0089

Dear Kelly:

Your communication which was addressed to Senator Hutchison has been received in this office. A member of our staff is presently reviewing it and will take appropriate action on your behalf. We appreciate the confidence you have expressed in the Senator by contacting our office. We want to assure you that every possible effort will be made to assist you, if at all possible.

You should expect a minimum of 30 days for the agency to respond to our inquiry. Please be assured that we will contact you as soon as we information available..

Sincerely,



Mary Fae Kamm
Director of Constituent Services

REPLY TO
10440 North Central Expressway
Suite 1160, LB 606
Dallas, TX 75231
(fax) 214 361 3502
email: mary_fae_kamm@hutchison.senate.gov



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

101 South Main
Temple, Texas
76501-7602

March 31, 2000

Ms. Kelly A. Krenz
Project Manager
Turner Collie & Braden Inc.
P. O. Box 130089
Houston, TX 77219-0089

Dear Ms. Krenz:

Thank you for your letter relative to the Public-Private Venture Family Housing Project, TC&B Job No. 32-00412-013, for Naval Station Ingleside, Texas.

The project as described and located as shown on the map should not have any significant adverse impacts on the natural resources in the area.

Thank you for the opportunity to comment on this activity.

Sincerely,

A handwritten signature in black ink, appearing to read "John P. Burt".

JOHN P. BURT
State Conservationist

COLLEGE OF LIBERAL ARTS

THE UNIVERSITY OF TEXAS AT AUSTIN

*Texas Archeological Research Laboratory • J. J. Pickle Research Campus, Bldg. 5
Austin, Texas 78712-1100 • (512) 471-5960 • FAX (512) 471-5973*

March 30, 2000

Ms. Kelly Krenz
Turner Collie & Braden Inc.
P.O. Box 130089
Houston, Texas 77219-0089

Re: TC & B Job No. 32-00412-013, Public-Private Venture Family Housing, Naval Station Ingleside, Texas

Dear Ms. Krenz:

This letter is submitted in response to a file search request that was received by fax at this office on 08 March 2000 concerning the above-referenced project and the possible location of recorded archeological or historical sites along several alternate routes. If you include in the letter (or on the quad map sections) the 7.5' USGS map names and what county/counties are involved in the projects, it will expedite the file search.

Our research has determined that in the three proposed delineated project areas, no archeological or historical sites have been reported to this office. However, please be aware that sites are in the general project areas. There are sites along the Corpus Christi beach, east of Project Area A and one site north of this project area, near Gregory. No sites in the project area are listed in the National Register of Historic Places (NRHP) or as State Archeological Landmarks.

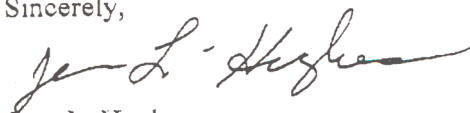
Please remember that information regarding site locations should not be made available to the general public, is not for publication or for use in public documents, and is for your company's use only. Site location information is protected by the National Historic Preservation Act of 1966 Title III, Section 304 and by Section 191.004 of the Antiquities Code of Texas. If you have questions regarding this policy please call Carolyn Spock, Curator of Records at TARL (512-471-6006) or the Texas Historical Commission, Archeology Division (512-463-6096).

Although no sites have been recorded within this project this does **not** mean that other sites are not present. The Lack of recorded prehistoric or historic remains may indicate that this project is in an area not yet explored for sites or that the sites may not be visible on the modern ground surface.

You need to contact the Archeology Division at the Texas Historical Commission (512-463-6096) who handles regulatory and permitting details, provides comments, and makes decisions regarding archeological work.

I hope this response adequately fulfills your request for information. If you have any questions, please let us know.

Sincerely,



Jean L. Hughes
Assistant Curator of Records

Enclosure

CC: Bill Martin, Archeology Division--THC

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

April 7, 2000

Mr. Kelly A. Krenz
Project Manager
Turner Collie & Braden Inc.
P.O. Box 130089
Houston, Texas 77219-0089

Re: Naval Station Ingleside Family Housing, TC&B Job # 32-00412-013

Dear Mr. Adams:

The following staff of the Texas Natural Resource Conservation Commission (TNRCC) have reviewed the above-referenced project and offer the following comments:

It has been determined from a review of the information provided that an Application for TNRCC Approval of Floodplain Development Project need not be filed with TNRCC. Our records show that the community is a participant in the National Flood Insurance Program and as such has a Flood Hazard Prevention Ordinance/Court Order. Accordingly, care should be taken to ensure that the proposed construction takes into account the possible Flood Hazard Areas within the community's floodplains. Please notify the community floodplain administrator to ensure that all construction is in compliance with the community's Flood Hazard Prevention Ordinance/Court Order.

If you have any questions regarding this comment, please feel free to contact Mr. Mike Howard, Floodplain Management Section, at (512) 239-6155.

The Strategic Assessment Division has reviewed the above-referenced project for General Conformity impacts in accordance with 40 CFR Part 93 and Chapter 101.30 of the TNRCC General Rules. The proposed action is located in San Patricio County, which is unclassified or in attainment of the National Ambient Air Quality Standard for all six criteria air pollutants. Therefore, general conformity does not apply.

Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions pose no significant impact upon air quality standards. The

Mr. Kelly A. Krenz

Page 2

April 7, 2000

minimal dust and particulate emissions can easily be controlled with standard dust mitigation techniques by the construction contractors.

If you have any questions regarding air quality, please feel free to contact Mr. Ken Gathright, SIP Development Team, at (512) 239-0599.

Staff recommends the environmental assessment address action that will be taken to prevent surface and groundwater contamination during and after construction.

If you have questions regarding water quality comments, please feel free to contact Mr. Clyde Bohmfalk, Policy and Regulations Division, at (512) 239-1315.

Thank you for the opportunity to review this project. If I may be of further service, please call me at (512) 239-1454.

Sincerely,



Mary Lively
Office of Environmental Policy, Analysis, & Assessment
Texas Natural Resource Conservation Commission



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

FEB 25 1993

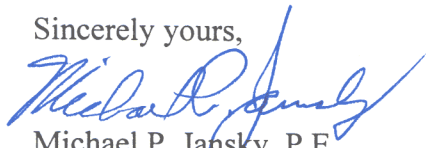
TO WHOM THIS MAY CONCERN

Internal Control No: SUSNG 99058-TX

Project Name: CONSTRUCTION OF FAMILY HOUSING, NAVAL AIR STATION
CORPUS CHRISTI, TX and Ingleside, TX

In accordance with our authority under Section 309 of the Clean Air Act, the Region 6 Office of the U.S. Environmental Protection Agency has completed its review of the attached referenced environmental assessment information. We have no other comments to offer.

Sincerely yours,


Michael P. Jansky, P.E.
Regional EIS Coordinator



DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1229
GALVESTON, TEXAS 77553-1229

REPLY TO
ATTENTION OF:

April 17, 2000

Environmental Branch

Ms. Kelly A. Krenz
Turner Collie & Braden Inc.
P.O. Box 130089
Houston, Texas 77219-0089

Dear Ms. Krenz:

This is in response to your letter with accompanying map concerning Public-Private Venture Family Housing for the U.S. Department of the Navy at Ingleside, Texas. The information was submitted to notify us of the proposal and to solicit issues, concerns, or specific information which should be included in the Environmental Assessment that will be prepared for this project.

After consideration by elements of the Planning, Environmental and Regulatory Division and the Engineering and Construction Division, our only comment is that the proposed project may require a Department of the Army (DOA) permit. Mr. Don Nanninga, Chief of the Evaluation Section, should be contacted at 409/766-3938 to determine if a DOA permit is necessary. Please reference File No. D-11175 in your communications.

We appreciate receiving information on the proposed project and trust that this response facilitates your planning and implementation process.

Sincerely,

A handwritten signature in cursive script, reading "Carolyn Murphy", is written above the typed name.

Carolyn Murphy
Chief, Environmental Branch



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

April 20, 2000

Kelly A. Krenz, Project Manager
Turner Collie & Braden Inc.
P.O. Box 130089
Houston, TX 77219-0089

Dear Mr. Krenz:

This responds to your letter, dated February 29, 2000, requesting that the Fish and Wildlife Service provide specific information, issues, or concerns that should be included in a proposed Environmental Assessment to evaluate new military family housing for NAVSTA Ingleside, Texas. Your letter briefly described and provided large-scale maps of three alternative sites, designated A, B, and C, near Portland and Ingleside, Texas.

On March 28, 2000, a Service biologist drove by Alternative Sites A and B, and made a brief reconnaissance on foot at Alternative Site C. Alternative Site A, located in eastern Portland, appeared to occupy an area devoted primarily to row crops, although some new residential and commercial development was nearby. Alternative Site B, located northwest of Ingleside, appeared to be in a recently-chained pasture with a 1- to 2- year regrowth of mesquite brush. Alternative Site C, on the northeast side of Ingleside, contained mature live oak/red bay woodlands, probably interspersed with small pothole wetlands, habitats typical of the Live Oak Ridge area. The site's vegetation was apparently undisturbed in its southern half, with an understory canopy cover near 100% up to a height of 2m, and with oak trees up to 10m tall reaching above that. The northern half of the 27-acre site appeared to have had its understory cleared at one time, leaving the trees intact, but had experienced approximately 10 years of natural regrowth. Due to the recent extended drought, the extremely porous sandy soils, and the density of the undergrowth, the pothole wetlands usually associated with this area were not directly observed, but a huge abundance of mosquitos gave indirect testimony to their presence.

The Service recommends that Alternative Site C not be selected for the proposed housing development project because its habitat value is far greater than the other alternative sites, and because cumulative losses of this habitat along Live Oak Ridge are already significant. The site's dense foliage not only provides cover for a number of animals and nesting habitat for local birds, but is a vital major stopover point for migratory songbirds crossing the Gulf of Mexico. The Service also recommends that the U.S. Army Corps of Engineers be asked to delineate any wetlands that may occur at Alternative Site C, preferably following antecedent rainfall conditions sufficient to raise the local water table to normal elevations. Lastly, it should be considered that archeological resources

like those common in the Ingleside area may lie hidden beneath the undisturbed vegetation at Alternative Site C, and that, unlike the cases with Alternative Sites A and B, surveying for such resources prior to clearing the site would be difficult in the extreme.

This concludes the Service's comments on the alternatives. We appreciate the opportunity to provide them. If you have any questions, please contact Johnny French at (361) 994-9005.

Sincerely,

A handwritten signature in dark ink, appearing to read "T. Serota", with a stylized, cursive script.

THOMAS D. SEROTA
Field Supervisor

cc: David Dall, National Wetlands Coordinator, Region 2, Albuquerque, NM



REPLY TO
ATTENTION OF.

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318

RECEIVED APR 4 2001

March 29, 2001

Corpus Christi Regulatory Office

SUBJECT: Permit D-11968

Mr. Kevin McLoughlin
Landmark Organization
1700 Rio Grande
Austin, TX 78701

Dear Mr. McLoughlin:

This concerns your March 1, 2001 letter received in this office for a Corps of Engineers' verification of a jurisdictional determination. The proposed U.S. Naval housing project would result in the filling or disturbance of two isolated wetland areas located on the southeast part of a 47.6-acre land tract. More specifically, the tract is located southwest of the intersection of S. Avenue A and McMullen Lane, south of the Aransas Pass High School, Aransas Pass, San Patricio County, Texas.

The Corps of Engineers has the authority to regulate certain work under provisions of Section 10 of the Rivers and Harbor Act and Section 404 of the Clean Water Act (Section 404). Section 404 provides for the regulation of the discharge of fill material into Waters of the United States, which includes all wetlands adjacent to tidal and nontidal waters. Isolated wetlands and outlying areas that are seasonally saturated may be regulated under the provisions of Section 404 depending on their relationship with interstate commerce.

Based on review of USGS topographic maps, National Wetland Inventory maps, aerial photography, a January 25, 2001 site inspection by this office and a subsequent February 16, 2001 site inspection by Mr. Paul Lazarine, your wetland consultant, it has been determined that only the two wetland areas are present. It has further been determined by our office that this wetland is an isolated, non-navigable intrastate water which has no known nexus to interstate commerce. As such, it is not subject to our jurisdiction under Section 404 of the Clean Water Act. Accordingly, a Department of the Army permit will not be required for the proposed filling of this wetland area.

Thank you for contacting our office and please do not hesitate to contact John Wong at the letterhead address or by telephone at 361-814-5847 should you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Lloyd Mullins", written in a cursive style.

Lloyd Mullins
Unit Leader
Corpus Christi Regulatory Office



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

August 27, 2001

Kelly A. Krenz, Project Manager
Turner Collie & Braden, Inc.
P.O. Box 130089
Houston, TX 77219-0089

Dear Ms. Krenz:

This responds to your letter, dated August 20, 2001, requesting that the Fish and Wildlife Service (Service) provide specific information, issues, or concerns that should be included in a proposed Environmental Assessment (EA) to evaluate three proposed sites for new military family housing for NAVSTA Ingleside, San Patricio County, Texas.

According to your August 20th letter, information regarding two of the three sites was provided by you to the Service in a letter sent in February 2000. A review of Service files shows that comments were provided to you in a letter dated April 20, 2000. The Service notes that the February 2000 letter identified three sites. It is the understanding of the Service in a conversation with you during the week of August 20, 2001 that the site identified as Site C in your February 2000 letter has been dropped from consideration. If this understanding is incorrect, please contact the Service immediately as the Service had concerns with regards to that proposed site.

With regards to the current EA, only the site identified as Alternative Site B, in the attachment provided with your August 20th letter, needs to be reviewed by the Service. The 50-acre site is located in Aransas Pass, San Patricio County, Texas. The site is near the Aransas Pass High School, along McMullen Lane near the intersection with South Avenue A. On August 9, 2001 you provided some site photographs to the Service by email transmission. The photographs document a site that appears to be heavily vegetated with brush and live oaks. One photograph shows a seasonal depressional wetland typical of the remaining live oak/red bay woodlands on the Live Oak Peninsula.

The Service recommends that Alternative Site B not be selected for the proposed housing development project because its habitat value is far greater than the other alternative sites, as described in the Service's April 20, 2000 letter. The cumulative losses of this habitat along Live Oak Ridge are already significant. Losses have been compounded by the recent Supreme Court Decision that defined depressional wetlands, such as those within this site, as non-jurisdictional. These wetlands are, however, vital to many species of animals, nesting resident birds and particularly to migratory songbirds. The remaining areas of this habitat type are a major stopover point for migratory birds during the spring and fall. Although this habitat type is currently without federal

regulatory protection the Service strongly recommends that the Navy not contribute to the loss of Live Oak/Redbay Woodlands by selecting Alternative Site B for the proposed housing project. This habitat type was characterized in the Integrated Natural Resource Management Plan for Naval Air Station Corpus Christi as "globally rare and restricted to the Coastal Bend of Texas".

The Service appreciates the opportunity to comment on the proposed housing project. If you have any questions, please contact Pat Bacak-Clements of our office.

Sincerely,


ALLAN M. STRAND
Field Supervisor

cc:

K. Boydston, Texas Parks and Wildlife Department, Austin, TX
M.E. Vega, Texas Parks and Wildlife Department, Corpus Christi, TX
Commanding Officer, Naval Station Ingleside, Ingleside, TX
Commanding Office, Naval Air Station, Corpus Christi, TX

FILE COPY

November 2, 2001

Ms. Diane Byerly
Environmental Division
NAS Corpus Christi

Re: Public-Private Venture Housing, South Texas Region

Dear Ms. Byerly:

You have asked for immediate turn-around on a request for valuation of the habitats to be impacted by the latest proposal for a housing development for Navy personnel. Staff received several request for information relative to the project in the last several months. It was understood during this time, that several sites were under consideration, but the decision seems to have been made last April. The basic issues, however, have not changed, and relate to mitigation for impacts to important fish and wildlife habitat. Mitigation for such impacts is required by the Sikes Act, under which this Department was requested to become a "partner" of the Navy in managing habitat for base activities; and the National Environmental Policy Act (NEPA), under which federal agencies are required to identify environmental impacts of federal actions, and mitigate them).

Previous reviews from this Department and the US Fish and Wildlife Service have repeatedly suggested that unnecessary impacts to live oak/red bay habitat should be avoided because of their extremely high importance to migratory bird species, especially those about to traverse the Gulf of Mexico southward or "falling out" upon return across the Gulf. In spite of these recommendations, each iteration of the development plans has included an increase in such impacts. It is understood that other considerations may affect the decision on which course of action the Navy may select. If the alternative chosen is least environmentally damaging, the need for compensatory mitigation is lessened. But if the constraints of meeting the Navy's needs force the selection of more damaging alternatives, the amount of compensatory mitigation necessarily increase.

The current preferred alternative (Aransas Pass) would remove approximately 50 acres of important live oak/red bay habitat, with a scattering of wetlands

Wetland Conservation Team - Coordination			
org	name	initials	date
LCC	Maryellen Vega		
WC	Rollin MacRae	jRm	11-02-01
RP	Bob Spain	out	
RP	Larry McKinney	out	
Comments:			

included therein. Replacement habitat should be of like kind, and in amounts adequate to compensate for the lost functions of the habitat. The habitat to be removed is of high quality, and is part of a larger contiguous tract. These qualities are important for their food and cover values; and the lack of fragmentation reduces energy needs of fauna while foraging and increases the nesting success. In order to replace the lost values, consideration must be given to increasing productivity on already existing habitat, or to acquiring and restoring previously cleared land in the same area, with attendant lag in productivity and cover values.

Therefore, if land of similar, already existing habitat is chosen for compensatory mitigation, a sufficiently large tract must be obtained so that management can eke out additional values beyond what is already there. Typically ratios of five to ten to one are needed to achieve the needed amount of mitigation credit. If restoration of a cleared tract is selected, then an amount of area is needed so that in the time needed for succession to full value the "annual average habitat value" will balance out within a project life of 30-50 years. Again, this typically requires approximately a three to seven to one ratio of land, plus the management costs of restoration. Under the first scenario, a tract of similar, existing habitat of 250 to 350 acres would be needed; while under the restoration scenario, 150 to 350 acres, plus restoration costs would be needed.

I hope this information is adequate for your immediate need. If you have further questions, you may reach me at the letterhead address, or at telephone (512) 389-4639.

Sincerely,

J. Rollin MacRae
Wetlands Conservation Program Leader
Resource Protection Division

Cc: Larry Mckinney, PhD, TPWD-Austin
Kathy Boydston, TPWD-Austin
Maryellen Vega, TPWD-Corpus Christi
Pat Clements, FWS-Corpus Christi

Attachment

Ecological Evaluation of the Public-Private Venture Housing South Texas Region

As per request for an immediate response, Texas Parks & Wildlife Department (Department) staff is providing the following information regarding the ecological importance of the habitat which currently exists on a site located at the intersection of Avenue A and McMullen Lane in Aransas Pass, Texas. Specifically, Department staff was requested to provide information regarding the type of habitat occurring at the site, the ecological importance of the habitat, and what types and amounts of habitat would be appropriate to compensate for impacts to this site.

This site (which is approximately 50 acres in size) has been designated as Alternative B in the Environmental Assessment prepared by Turner Collie & Braden. The project site currently contains dense, mature live oak brush and pothole wetlands. The pothole wetland located near the intersection of McMullen Lane and Avenue A was previously bisected when McMullen Lane was constructed. This wetland appears to be permanent and is dominated by black willow (*Salix nigra*), rattlebush (*Sesbania drummondii*), cattail (*Typha* spp.), largeleaf pennywort (*Hydrocotyle bonariensis*), spikerush (*Eleocharis* spp.), and smartweed (*Polygonum* spp.). Department staff was not able to view another wetland which is located in the interior of the site. Based on aerial photographs of the area, it appears that this wetland may be ephemeral. Typically, these ephemeral pothole wetlands contain a diverse assemblage of plants and are usually dominated by bushy broomsedge (*Andropogon glomeratus*), little bluestem (*Schizachyrium scoparium*), lovegrass (*Eragrostis secundiflora*), three awns (*Aristida* spp.), frogfruit (*Phyla* spp.) and white-top sedge (*Dichromena colorata*).

The project site contains dense, mature woodlands that are dominated by live oak (*Quercus virginiana* var. *fusiformis*), laurel oak (*Q. hemisphaerica*), red bay (*Persea borbonia*), wax myrtle (*Myrica cerifera*), American beautyberry (*Callicarpa americana*), farkleberry (*Vaccinium arboreum*), and eastern coral bean (*Erythrina herbacea*). These live oak pothole wetland ecosystems contain extremely diverse wetland and upland plant species.

A November 1987 report prepared by the U.S. Fish and Wildlife Service entitled "The Distribution, Status and Ecological Value of Inland Pothole Wetlands Associated with the Live Oak Brush Community in South Texas" addresses the significant value of this habitat type. According to information contained in this report, the live oak brush pothole wetland complex supports approximately 20 species of mammals. Numerous species of amphibians, reptiles and fish are known to occur in these pothole wetlands. Several biologists have documented and acknowledged the extremely high natural resource value of this live oak wetland pothole complex habitat type. This community type is quite unique in the fact that it is found only in the Texas Coastal Bend. Although the live oak brush and pothole wetland complex provides extremely valuable habitat to a significant number of fish and wildlife species, these areas are probably most important to avian species, particularly neotropical migratory birds. Human related activities such as brush clearing, urbanization, and alteration of pothole wetlands have resulted in the destruction and degradation of these unique and diverse ecosystems. According to

information contained in the 1987 report cited earlier, elimination of the live oak brush and associated vegetation surrounding the potholes may alter the hydrology and morphology of the pothole basins as well as interfering with detrital input. Disturbed potholes, such as those which have been cleared of surrounding vegetation, were found to be utilized less by bird species. Evidently, resident and many migratory bird species that prefer secluded habitats or require dense vegetation for nesting, roosting, or escape cover rarely occurred in potholes that had been cleared of surrounding vegetation. The high degree of habitat heterogeneity provided by natural, unmodified live oak pothole wetlands is apparently responsible for the importance of this habitat to the organisms using the live oak brush pothole wetland complex.

A vegetational survey, which was performed for the Navy's facility located at Ingleside, also documents the importance of this habitat type. Based on information contained in the June 17, 1992 report entitled "Naval Station Ingleside - Summary of a Brief Botanical Survey", the author states that "the mosaic of oak-redbay woodlands is of conservation interest because this community is found only in the Texas Coastal Bend, and there only on the Ingleside Barrier in Nueces, San Patricio, and coastal adjacent counties". This report clearly stresses the unique and extremely important value of this habitat type.